# gnuplot 5.2

## An Interactive Plotting Program

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# Part I

# Gnuplot

## Cx:n8" (Copyright)

```
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```

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```
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  in addition to the base release version number,
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```
     AUTHORS
             Original Software:
                Thomas Williams,  Colin Kelley.
             Gnuplot 2.0 additions:
                Russell Lang, Dave Kotz, John Campbell.
             Gnuplot 3.0 additions:
                Gershon Elber and many others.
             Gnuplot 4.0 and 5.0 additions:
                See list of contributors at head of this document.
```

(0J2<$*$*$^$+$JLu;Lu$O@5$7$/$J$$$+$bCN$l$^$;$s$N$G>\$7$/$O>e5-$N86J8$rEv$?$C$F$/$@$5$$!#Lu<T$O@UG$$r;}$A$^$;$s!#)

```
   Copyright (C) 1986 - 1993, 1998, 2004, 2007  Thomas Williams, Colin Kelley
```

$3$N%=%U%H%&%'%"$H$=$NIUB0J8=q$N;HMQ!"J#@=!"G[I[$N5v2D$O!">e5-$NCx:n8"(copyright) I=<($,!"A4$F$NJ#@=J*$K=q$+$l$F$$$k$3$H!"$*$h$SCx:n8"I=<($H$3$N5vBzJ8$NN>J}$,$=$N;Y1gJ8=q$K=q$+$l$F$$$k$3$H$r>r7o$H$7$?>e$G!"$3$NJ8=q$K$h$jJ]>Z$5$l$^$9!#

$3$N%=%U%H%&%'%"$N=$@5$bG'$a$i$l$F$$$^$9!#$7$+$7!"=$@5$r4^$`A4%=!<%9%3!<%I$NG[I[$N8"Mx$OG'$a$i$l$^$;$s!#=$@5$O%j%j!<%9HG$KBP$9$k%Q%C%A$N7A$GG[I[$7$J$1$l$P$J$j$^$;$s!#=$@5$5$l$?%=!<%9$r%3%s%Q%$%k$7$F:n$i$l$?%P%$%J%j$NG[I[$O!"0J2<$N>r7o$N85$GG'$a$i$l$^$9:

```
 1. %j%j!<%9HG$+$i$N%=!<%9$N=$@5ItJ,$r!"%Q%C%A$N7A$G%P%$%J%j$H6&$KG[
    I[$9$k$3$H
 2. %Y!<%9$H$J$k%j%j!<%9HG$H6hJL$9$k$?$a$K!"$=$N%P!<%8%g%sHV9f$KFCJL
    $J%P!<%8%g%s;XDj;R$rIU2C$9$k$3$H
 3. $=$N=$@5HG$N%5%]!<%HMQ$K!"$"$J$?$NL>A0$H%"%/%;%92DG=$J%"%I%l%9$H
    $rDs6!$9$k$3$H
 4. %Y!<%9$H$J$k%=%U%H%&%'%"$N;HMQ$K4X$7$F$O!"2f!9$NO"Mm>pJs$rJ];}$7
    B3$1$k$3$H
```

%j%j!<%9HG$N%=!<%9%3!<%I$r!"%Q%C%A$N7A$G$N%=!<%9$N=$@5$H0l=o$KG[I[$9$k$3$H$O!"%P%$%J%jG[I[$K4X$9$k >r9`2 $+$i 4 $^$G$N>r7o$N85$G5v$5$l$^$9!#

$3$N%=%U%H%&%'%"$O"$"$k$,$^$^" Ds6!$5$l!"E,MQ2DG=$JK!N'$G5v$a$i$l$kHO0O$NJ]>Z$rI=L@$"$k$$$O0E<($7 $F$$$O$$^$;$s!#

```
Cx<T
        %*%j%8%J%k%=%U%H%&%'%":
           Thomas Williams,  Colin Kelley.
        Gnuplot 2.0 DI2C:
           Russell Lang, Dave Kotz, John Campbell.
        Gnuplot 3.0 DI2C:
           Gershon Elber $H$=$NB>$N?M!9!#
        Gnuplot 4.0, 5.0 DI2C:
           $3$NJ8=q$N@hF,$N4sM?<T (contributors) $N0lMw;2>H!#
```

# $O$8$a$K (Introduction)

**gnuplot** $O!"%]!<%?%V%k$J%3%^%s%I%i%$%sF~NOJ}<0$N%0%i%U%f!<%F%#%j%F%#$G!"Linux, OS/2, MS Windows, OSX, VMS, $=$NB>B?$/$N%W%i%C%H%[!<%`>e$GF0:n$7$^$9!#%=!<%9%3!<%I$K$OCx:n8"$,$"$j$^$9$,!"L5NA$GG[I[$5$l $F$$$^$9 ($9$J$o$A!"$=$l$KBP2A$r;YJ'$&I,MW$O$"$j$^$;$s)!#85$O!"2J3X<T$d3X@8$,?t3X4X?t$d%G!<%?$J$I$r BPOCE*$KI=<($G$-$k$h$&$:n$i$l$?$N$G$9$,!"8=:_$^$G$K!"Nc$($P Web %9%/%j%W%H$J$I!"B?$/$NHsBPOC7?$NMx MQ$b%5%]!<%H$9$k$h$&$K@.D9$7$F$$$^$9!#$3$l$O!"Nc$($P Octave $N$h$&$K%5!<%I%Q!<%F%#$N%"%W%j$1!<%7%g %s$NIA2h% (%s%8%s$H$7$F$b;H$o$l$F$$$^$9!#gnuplot $O!"1986 $h$j%5%]!<%H$H3hH/$J3+H/$,9T$o$l$F$$$^$9!#

gnuplot $O!"2 <!85!"$^$?$O3 <!85$N!"B?$/$N<cN`$N%0%i%U$r%5%]!<%H$7$F$$$^$9: @^@~%0%i%U!"E@%0%i%U!"K@ %0%i%U!"Ey9b@~!"%Y%/%H%k>lIA2h!"6JLL!"$=$7$F$=$l$i$K4XO"$9$k$5$^$6$^$JJ8;zNsEy!#$=$7$F$5$i$K$$$/$D $+$NFCJL$JIA2h7?$b%5%]!<%H$7$F$$$^$9!#

gnuplot $OB?$/$N0[$J$k=PNO$r%5%]!<%H$7$F$$$^$9: BPOC7?%9%/%j!<%s=PNO7A<0 (%^%&%9$d% [%C%H%-!<F~NO$b2D G=)!"%Z%s%W%m%C%?$d8=:_$N%W%j%s%?$X$ND>@\=PNO!"$^$?$OB?$/$N%U%!%$%k7A<0$X$N=PNO (eps, emf, fig, jpeg, LaTeX, pdf, png, postscript, ...)!#gnuplot $O!"MF0W$K?7$7$$=PNO7A<0$rDI2C$9$k$h$&3HD%$9$k$3$H$,$G$-$^ $9!#:G6aDI2C$5$l$?BPOC7?=PNO7A<0$K$O!"wxWidgets (J#?t$N%W%i%C%H%[!<%`$GMxMQ2DG=), Qt $r85$K$7$?$b$N $,$"$j$^$9!#svg $d HTML5 canvas =PNO7A<0$rMxMQ$9$l$P!"%0%i%U$r Web %Z!<%8Fb$K%^%&%9MxMQ2DG=$J7A$G Kd$a9~$s$@=PNO$r@8@.$9$k$3$H$b$G$-$^$9!#

**gnuplot** $N%3%^%s%I8@8l$OBgJ8;z>.J8;z$r6hJL$7$^$9!#$9$J$o$A!">.J8;z$G=q$+$l$?%3%^%s%I$d4X?tL>$O!"$= $l$i$rBgJ8;z$G=q$$$?$b$N$H$OF1$8$G$O$"$j$^$;$s!#$$:$l$N%3%^%s%I$b!"$"$$^$$5$NL5$$8B$j$K$*$$$F>J N,$9$k$3$H$,$G$-$^$9!#l 9TC$K$O%;%_%3%m%s (;) $G6h@Z$C$FJ#?t$N%3%^%s%I$r=q$/$3$H$,$G$-$^$9!#J8;zNs$O C10l0zMQId!"$"$k$$$OF s=E0zMQId$N$I$A$i$+$G=q$-;O$a$^$9$,!"N><T$K$OHyL/$J0c$$$,$"$j$^$9 (>\:Y$O!"0J 2<;2>H: **syntax (p. 49)**)!#Nc:

```
set title "My First Plot";  plot 'data';  print "all done!"
```

%3%^%s%I$O!"U#?t9T$K$^$?$,$k$3$H$,$G$-$^$9!#$=$N>l9g$O!":G=*9T0J3 0$NA4$F$N9T$N9TKv$K%P%C%/%9%i%C%7%e (\) $r=q$/I,MW$,$"$j$^$;$s!#%P%C%/%9%i%C%7%e$OI,$:3F9T*:G8e* $NJ8;z$G$J$/$F$O$J$j$^$;$s!#$=$N7k2L$H$7 $F%P%C%/%9%i%C%7%e$H!"$=$l$KB3$/2~9TJ8;z$,B8:_$7$J$+$C$?$+$N$h$&$K07$o$l$^$9!#$D$^$j!"2~9TJ8;z$,9 %Z!<%9NLr$r9$k$3$H$b$"$j$^$;$s7!"2~9T$K$h$C$F%3%a%s%H$,=*N;$9$k$3$H$b$"$j$^$;$s!#$G$9$+$iJ#?t9T $K$^$?$,$k9T$N@hF,$r%3%a%s%H%"%&%H$9$k$H!"$=$N%3%^%s%IA4BN$,%3%a%s%H%"%&%H$5$l$k$3$H$K$J$j$^$9 (0J 2<;2>H: **comments (p. 26)**)!#$J$*CmOU$7$^$9$,!"$b$7!"U#?t9T$N%3%^%s%I$N$I$3$+$G% (%i!<$,5/$-$?$H$-!" %Q!<%5$O$=$N>l=j$r@53N$K$O;X<($9$k$3$H$,$G$-$^$;$s$7!"$^$?!"@5$7$$9T$K;X<($9$kI,MW$b$J$$$G$7$g$&!#

$3$N%I%-%e%a%s%H$K$*$$$F!"Cf3g8L ({}) $O>JN,2DG=$J0z?t$rI=$9$b$N$H$7!"=DK@ (|) $O!"8_$$$KGSB>E*$J0z?t $r6h@Z$k$b$N$H$7$^$9!#**gnuplot** $N%-!<%o!<%I$d **help** $K$*$1$k9`L\L>$O!"5U0zMQId (!.)!"$^$?$O2DG=$J>l9g $K$O **boldface** (B@;z) $GI=$7$^$9!#3Q3g8L (<>) $O!"$=$l$KBP1~$9$k$b$N$KCV$-49$($i$l$k$Y$-$b$N$rI=$7$^ $9!#B?$/$N>l9g!"%*%W%7%g%s$N0z?t$K$O!"$=$l$,>JN,$5$l$k$H%G%U%)%k%H$NCM$,;HMQ$5$l$^$9!#$7$+$7!"$3$l $i$N>l9g!"I,$:$7$b$3Q3g8L$,Cf3g8L$G0O$^$l$F$=q$+$l$F$$$k$o$1$G$O$"$j$^$;$s!#

$"$k9`L\$K$D$$$F$N%X%k%W$,I,MW$J$H$-$O!"**help** $KB3$1$F$=$N9`L\L>$rF~NO$7$F2<$5$$!#$^$?$OC1$K **help ?** $G$b%X%k%W$N9`L\$N%a%K%e!<$,8=$o$l$^$9!#

BgNL$N%0%i%U%5%s%W%k$,!"0J2<$N Web %Z!<%8$K$"$j$^$9!#http://www.gnuplot.info/demo/

%3%^%s%I%i%$%s$+$i5/F0$9$k$H$-$O!"0J2<$N=q<0$,;H$($^$9!#

```
gnuplot {OPTIONS} file1 file2 ...
```

$3$3$G file1, file2 Ey$O!"**local** %3%^%s%I$G<h$j9~$`$N$HF1Ey$NF~NO%U%!%$%k (%9%/%j%W%H%U%!%$%k) $G$9!#X11 %Y!<%9$N%7%9%F%`$G$O!"0J2<$N=q<0$,;H$($^$9!#

```
gnuplot {X11OPTIONS} {OPTIONS} file1 file2 ...
```

>\:Y$O!"X11 $N%I%-%e%a%s%H!"$*$h$S0J2<;2>H: **x11 (p. 260)**!#

gnuplot $KM?$($k%*%W%7%g%s$O!"%3%^%s%I9T$N$I$3$KCV$$$F$b9=$$$^$;$s!#%U%!%$%k$O;XDj$7$?=g$K<B9T$5$l!"F1MM$K-e %*%W%7%g%s$GG$0U$N%3%^%s%I$rM?$($k$3$H$b$G$-$^$9!#Nc:

```
gnuplot   file1.in   -e "reset"   file2.in
```

FCJL$J%U%!%$%kL>"-" $O!"I8=`F~NO$+$iFI$^$;$k$N$K;H$$$^$9!#**gnuplot** $O:G8e$N%U%!%$%k$r=hM}$7=*$o$k$H=*N;$7$^$9!#FI$_9~$^$;$k%U%!%$%k$r0l$D$b;XDj$7$J$$>l9g$O!"**gnuplot** $OI8=`F~NO$+$i$NBPOCF~NO$r<h$j$^$9!#>\:Y$O!"0J2<;2>H: **batch/interactive (p. 24)**!#gnuplot MQ$N%*%W%7%g%s$K$D$$$F$O!"0J2<$N$h$&$K$7$F0lMw$r8+$k$3$H$,$G$-$^$9:

```
gnuplot --help
```

>\:Y$O0J2<;2>H: **command line options (p. 24)**!#

BPOC7?IA2h%&%#%s%I%&$G$N:n6HCf$O!"'h' $rBG$D$H%[%C%H%-!< (**hotkeys**) $H%^%&%95!G= (**mousing**) $K4X$9$k%X%k%W$r8+$k$3$H$,$G$-$^$9!#**seeking-assistance** $N%;%/%7%g%s$O!"$5$i$J$k>pJs$d%X%k%W!"FAQ $rC5$9<j3]$j$rM?$($F$/$l$k$G$7$g$&!#

## C5$7=P$9<j=u$1 (Seeking-assistance)

8x<0$N gnuplot Web %Z!<%8$O0J2<$K$"$j$^$9!#http://www.gnuplot.info

=u $1 $r 5a $a $k A0 $K !"%U%!%$ %k FAQ.pdf $+ !"$^ $? $O >e $N Web %5 %$ %H $N FAQ (EY!9J9$+$l$k<ALd; Frequently Asked Questions) $N0lMw

$r%A%'%C%/$7$F$/$@$5$$!#

gnuplot %f!<%6$H$7$F$N<j=u$1$,I,MW$J$i!"0J2<$N%K%e!<%9%0%k!<%W$rMxMQ$7$F$/$@$5$$!#

```
comp.graphics.apps.gnuplot
```

gnuplot %a!<%j%s%0%j%9%H$X$NEj9F$NJ}K!$K4X$7$F$O!"SouceForge $K$"$k gnuplot $N3+H/ Web %5%$%H http://sourceforge.net/projects/gnuplot

$r;2>H$7$F$/$@$5$$!#

gnuplot %a!<%j%s%0%j%9%H$K%a!<%k$r=q$/A0$K!":G=i$K$=$N%a!<%j%s%0%j%9%H$K;22C$9$kI,MW$,$"$k$3$H$KCm0U$7$F$/$@$5$$!#$3$l$O!"%9%Q%`$NNL$r8:$i$9$3$H$r0]$}$9$k?$a$KI,MW$G$9!#

%a!<%j%s%0%j%9%H%a%s%P!<$X$N%a!<%k%"%I%l%9:

```
gnuplot-info@lists.sourceforge.net
```

%P%0%j%]!<%H!"%=!<%9$N2~NIEy$O0J2<$N trackers $K upload $7$F$/$@$5$$:

```
http://sourceforge.net/projects/gnuplot/support
```

$?$@$7!"%j%]!<%H$rAw$kA0$K!"$"$J$?$,%j%]!<%H$7$h$&$H$7$F$$$k%P%0$,!"$h$j?7$7$$$HG$4{$K=$@5$5$l$F$$$J$$$+%A%'%C%/$7$F$/$@$5$$!#

3+H/HG$K4X$9$k%a!<%j%s%0%j%9%H:

```
gnuplot-beta@lists.sourceforge.net
```

2?$+<ALd$rEj9F$9$k$H$-$O!"$"$J$?$,;HMQ$7$F$$$k gnuplot $N%P!<%8%g%s!"=PNO7A<0!"%*%Z%l!<%F%#%s%0%7%9%F%`!"$H$$$C$?A4$F$N>pJs$r4^$`$h$&$K$7$F$/$@$5$$!#$=$l$@$1$GJD$8$F$$$F!"$=$NLdBj$r:F8=$9$kC;$$%9%/%j%W%H$rDs<($9$k$H$J$*NI$$$G$7$g$&!#

# ?7$7$$5!G= (New features)

## %P!<%8%g%s 5.2 $GF3F~$5$l$?5!G= (Features introduced in version 5.2)

%P!<%8%g%s 5.2 $O gnuplot $N8=:_$N0BDjHG7ONs$G$9!#0J2<$N?75!G=$N0lMw$O!"2017 5 7n; ~E@$G:G?7$N$b$N$G$9!#

### ?7$7$$IA2h%9%?%$%k$H%*%W%7%g%s (New plot styles and style options)

- 3<!85IA2h%9%?%$%k with zerrorfill!#0J2<;2>H: zerrorfill, fenceplots, zerror %G%b!#
- %S!<%9%&%)!<%`%0%i%U!#0J2<;2>H: set jitter, beeswarm, %S!<%9%&%)!<%`%0%i%U%G%b!#
- %0%i%U$NE@ (points) $G;H$o$l$k8D!9$N5-9f$O!"%G!<%?CM$G@)8f$G$-$^$9!#(0J2<;2>H: pointtype variable)

### %G!<%?MQ$N?7$7$$A0=hM}%U%#%k%? (New data pre-processing filters)

- %G!<%?=89gFb$G$N=P8=2s?t$N@55,2= (0J2<;2>H: smooth fnormal)
- %G!<%?$N3,5iI}3d$jEv$F$N<+F02= (0J2<;2>H: bins)

### 6K:BI8%b!<%I$N2~NI$H3HD% (Polar mode improvements and extensions)

- %i%Y%k!"Lp (arrow)!"%*%V%8%'%/%H$NDj5A$K6K:BI8$,;H$($^$9!#
- set [m]ttics $O6K:BI8%b!<%I$G$N30<~J}0L<4$N%i%Y%k$H9o$_$rG[CV$7$^$9!#0J2<;2>H: 6K:BI8<4$H9o$_%i%Y%k%G%b
- set rlabel $OF07B<4 (r <4) $N>e$K%i%Y%k$rG[CV$7$^$9!#
- 5U8~$-$N rrange (Nc: set rrange [90:0]) $GE75eCOJ?:BI8 (celestial horizontal coordinates) $,;H$($k$h$&$K$J$j$^$9!#0J2<;2>H: E7BN50F;%G%b
- set border polar $O6K:BI8$N30<~$N2s$j$K<B@~$rIA$-$^$9!#
- set theta $O6K:BI8%0%i%U$N30<~J}0L<4$G$N theta = 0 $N0LCV$H!"3Q$NA}2CJ}8~ (;~7W2s$j$+H?;~7W2s$j$+) $r@)8f$7$^$9!#

### Hs@~7A:BI87O (Nonlinear coordinates systems)

- %0%i%U$NG$0U$N<4$K!"@~7A$NHO0O$X$N<IA|$H$=$N5U<IA|$r0UL#$9$k4X?t$NAH$r3d$jEv$F$k$3$H$,$G$-!"$=$l$rHs@~7A$K$9$k$3$H$b2DG=$G$9 (0J2<;2>H: set nonlinear)!#Hs@~7A x,y <4%G%b
- $J$8$_?<$$%3%^%s%I set logscale $O!"8=:_$O4X?t$NAH log(x), exp(x) $K$h$kHs@~7A<4$NNc$N0l$D$H$7$F:F<BAu$5$l$^$7$?!#

### ?7$7$$%3%^%s%I$d%*%W%7%g%s (New commands and command options)

- 7+$jJV$7<B9TItJ,$NCf%+%C%3Fb$G$O!"continue $O<!$N7+$jJV$7$K$9$0$K0\F0$7!"break $O7+$jJV$7$rCfCG$7$^$9!#
- toggle {<plotno> | "plottitle" | all}" $O!"BPOCE*$K8=:_$N%0%i%U$N9=@.MWAG$rI=<($5$;$k$+>C$9$+$rA*Br$G$-$^$9!#
- save fit $OHs?d>)$N%3%^%s%I update $rCV$-49$(
- set table "outfile.name" append $G!"$=$N8e$N table =PNO$r!"4{$KB8:_$9$k%F%-%9%H%U%!%$%k$r>e=q$-$;$:!"DI2C=PNO$K$7$^$9!#
- set pm3d lighting $G!"H?<M8w%0%$%i%$%H$K$h$kE@8w8;%b%G%k$r;HMQ$7$^$9 (0J2<;2>H: lighting)!#
- set minussign $O!"Ii$N?t$G$N%"%9%-!<J8;z '-' $r!"8=:_$N%(%s%3!<%I$G$NFC<lJ8;z$KCV$-49$($k$h$&gnuplot $K;X<($7$^$9!#

- **set micro** $O! "2J3XMQ@\F,<-$N!V%^%$%/%m!WMQ$N%"%9%-!<J8;z 'u' $r!"8=:_$N%(%s%3!<%I$G$NFC<lJ8;z$KCV$-49$($k$h$& gnuplot $K;X<($7$^$9!#micro, minussign $NFC<l0u:~5-9f$O!"<49o$_%i%Y%k$H!"L@<(E*$K gprintf() $G@8@.$7$?J8;zNs$K$N$_;HMQ$7$^$9!#$=$l$i$NJ8;zI=8=$N%P%$%HNs$O!"8=:_$N%(%s%3!<%I@_Dj$K0MB8$7$^$9!#

### ?7$7$$G[Ns%G!<%?7? **"array"** **(New data type "array")**

- $3$N%P!<%8%g%s$N gnuplot $K$O!"?7$7$$G[Ns%G!<%?7? **array name[size]** $,F3F~$5$l$F$$$^$9!#G[Ns$O!";HMQ$9$kA0$K@k8@$7$J$1$l$P$$$1$^$;$s!#3FG[NsMWAG A[i] $O!"J8;zNs!"@0?t!"<B?t!"J#AG?t$N$$$:$l$G$b9=$$$^$;$s!#0l$D$NG[Ns$,0[$J$k7?$NMWAG$r;}$D$3$H$b2DG=$G$9!#4p?t1i;;;R |A| $OG[Ns$N%5%$%:$rJV$7$^$9!#0J2<;2>H: **arrays**!#

### ?7$7$$=PNO7A<0$H$=$N%*%W%7%g%s **(New terminals and terminal options)**

- ?7$7$$ **sixelgd** =PNO7A<0$O!"vt340 $H8_49$NC<Kv%(%_%e%l!<%?>e$G gnuplot $r<B9T$7$?>l9g$K!"%0%i%U$r=PNO$9$kL?Na$N%3%^%s%I%i%$%s$N9g4V$K%0%i%U$r64$`$h$&$J=PNO$r%5%]!<%H$7$^$9!#0J2<;2>H: **sixelgd**!#
- **domterm** =PNO7A<0$O!"svg $r2r<a$9$kC<Kv%(%_%e%l!<%?>e$G gnuplot $r<B9T$7$?>l9g$K!"%0%i%U$r=PNO$9$kL?Na$N%3%^%s%I%i%$%s$N9g4V$K%0%i%U$r64$`$h$&$J=PNO$r%5%]!<%H$7$^$9!#
- **windows** =PNO7A<0$O!"8=:_$N%0%i%U$N%S%C%H%^%C%W%U%!%$%k$X$NJ]B8$r%5%]!<%H$7$^$9!#
- **windows** =PNO7A<0$O!"%0%i%U%&%#%s%I%&$H wgnuplot %F%-%9%H%&%#%&%s%I%&$r%I%C%-%s%0$G$-$^$9!#
- **windows** =PNO7A<0MQ(;n83E*) Direct2D/DirectWrite ?7%P%C%/%(%s%I!#
- **wxt** =PNO7A<0$O!"Windows >e$G$O EMF %U%!%$%k$X$N=PNO$H%W%j%s%?=PNO$r%5%]!<%H!#
- **dumb** =PNO7A<0$O!"@~$HNN0h$NEI$jDY$7$G ANSI %+%i!<$r%5%]!<%H!#
- **tkcanvas** =PNO7A<0$O!"?7$7$$8@8l$H!":G6a$N gnuplot $NB?$/$N5!G=$r%5%]!<%H$9$k$h$&$K=q$-D>$5$l$F$$$^$9 (5.0.3 $h$j)!#

### $=$NB>$N?7$7$$5!G= **(Other new features)**

- 3 <!85%0%i%U$N8~$-$K1F6A$9$kDI2C2sE>3Q **azimuth**!#$3$l$O!"%3%^%s%I%i%$%s$+$i (0J2<;2>H: **set view azimuth**)!"$^$?$O1&%^%&%9%\%?%s$N%I%i%C%0$G@_Dj$G$-$^$9!#
- Windows >e$N gnuplot $G$O!"Unicode (BMP) %9%/%j%W%H$NF~NO$r!"**set encoding** $K$h$k8=:_$N%(%s%3!<%I (UTF-8 $r4^$`) $KJQ49$7$F2r<a$7$^$9!#
- J8;zOH$K6-3&?'$HGX7J?'$r;XDj$G$-$^$9 (0J2<;2>H: **set style textbox**)
- %0%i%U$NI=Bj$N%+%9%?%^%$%: (0J2<;2>H: **plot title**, **set key**, **multiple keys**)
- 5?;w%U%!%$%k '+' $G$N%0%i%U$N%5%s%W%j%s%0HO0O;XDj$K%5%s%W%j%s%06h4V$r;XDj$G$-$^$9!#Nc: plot sample [t=0:100:10] '+' using (t):(1):(label[t]) with labels
- 5?;w%U%!%$%k '++' $O!"x, y <4$G$J$/ u, v <4$K1h$C$?%5%s%W%j%s%0$r9T$$$^$9!#$3$l$O!"3 <!85%0%i%U Cf$K!"JL!9$N%G%+%k%H:BI8NN0h$r@j$a$k$h$&$JJ#?t$NG^2pJQ?t6JLL$rCV$/$N$KJXMx$G$7$g$&!#
- ^R $G!"AH$_9~$_ readline (Windows $G$b;H$o$l$F$$$k) $NMzNr$N5U8~$-8!:w$r3+;O$7$^$9!#0J2<;2>H: **command-line-editing**!#
- Windows $G$N **set output "PRN"** $K$h$k0u:~$N2~NI!#0J2<;2>H: **windows printing**!#

### %P!<%8%g%s **5.0** $GF3F~$5$l$?5!G= **(Features introduced in version 5.0)**

- @~$NE@@~/GK@~%Q%?!<%s$O!"8=:_$O@~$NB>$NB0@-$HFHN)$K;XDj$G$-$^$9!#0J2<;2>H: **dashtype**, **set dashtype**, **set linetype**!#
- 0l$D$N plot $G$NO"B3$7$?MWAG$K;HMQ$5$l$k%G%U%)%k%H$N?'$N=d2sNs$O!"?'<e<T$K$h$jMF0W$K6hJL$G$-$k$b$N$K$J$j$^$7$?!#$=$N?'$N=d2sNs$O!"%f!<%6$,@)8f$G$-$^$9 (0J2<;2>H: **set colorsequence**)!#$3$N;EAH$_$O!"Gr9u$N%0%i%U$r@8@.$9$k$3$H$G$b9T$($^$9 (0J2<;2>H: **set monochrome**)!#$J$*!"=>Mh$N gnuplot $N%P!<%8%g%s$G$O **monochrome** $O!"8=:_$N=PNO7A<0$r **set temrinal** $GJQ99$9$9$k$H$-$K$N$_$K$7$+A*Br$G$-$^$;$s$G$7$?!#

- ?7$7$$IA2h%9%?%$%k **with parallelaxes**!"**with table**!"$*$h$SEy9b@~$N%i%Y%kIU$1!#
- C1D4 3 <!%9%W%i%$%s$K$h$k%G!<%?$N?7$7$$A0=hM}%U%#%k%?(0J2<;2>H: **smooth mcsplines**)
- J8;z$N=q<0@)8f$O!"2<IU$-!">eIU$-!"%U%)%s%H%5%$%:!"$=$NB>0JA0M-8z$@$C$?$b$N$K2C$(!":#$OB@;zBN (bold) $H<PBN (italic) %U%)%s%H@_Dj$b%5%]!<%H$7$F$$$^$9!#$3$N%b!<%I(3HD%J8;z=hM}) $O!"8=:_$O%G%U%)%k%H$GM-8z$H$J$C$F$$$^$9!#0J2<;2>H: **enhanced text**!#J8;zNsMWAG$OOH$G0O$`$3$H$b$G$-$^$9(0J2<;2>H: **set style textbox**)!#
- BPOC7?=PNO7A<0$O!"%O%$%Q!<%F%-%9%H%i%Y%k$r%5%]!<%H$7$F$$$^$9$,!"$3$l$O%^%&%9$,$=$N%i%Y%k$N%j%s%/E@>e$K$"$k$H$-$K$N$_8=$l$k$b$N$G$9!#
- ?7$7$$:BI87O(EY!"J,!"IC)!#0J2<;2>H: **set xtics geographic**!#
- <4$N8+=P$7$N%G%U%)%k%H=q<0MQ$N"% h" (LaTeX 7O=PNO7A<0$G$O"$%h$")!#$3$N=q<0$OC $NI8=`=q<0$N%g $K;w$F$$$^$9$,!";X?tItJ,$,$"$k>l9g$O!"$=$l$,>eIU$-J8;z$H$7$F=q$+$l$k$3$H$,0c$$$^$9!#Nc$($P!"1.2E05 $G$J$/1.2 x 10^5 $H$J$j$^$9!#
- %9%/%j%W%HFb$G!"%$%s%i%$%s%G!<%?$rL>A0IU$-$N%G!<%?%V%m%C%/$H$7$FJ]B8$77+$jJV$7IA2h$G$-$k$h$&$K!#0J2<;2>H: **inline data**!#
- 32-bit $N%"%k%U%!CM+ RGB ?'I=5-(#AARRGGBB) $r%5%]!<%H!#0J2<;2>H: **colorspec**!#
- hsv2rgb(H,S,V) $H$$$&JQ494X?t$K$h$k HSV ?'6u4V$N%5%]!<%H!#
- Bh2 <4 (x2, y2) $O!"BP1~4X?t$K$h$j!"Bh1 <4$K8GDj$G$-$^$9!#:G$bC1=c$J$N$O!"$3$l$K$h$jBh1 <4$H2<4$N<4$NHO00O$r0lCW$5$;$k$3$H$G$9!#$h$j0lHL$K!"$3$l$K$h$jHs@~7A$J<4$rDj5A$G$-$k$h$&$K$J$j$^$9$,!"$3$l$^$G$O$=$N$h$&$J$3$H$OBP?t<4$7$+$G$-$^$;$s$G$7$?!#0J2<;2>H: **set link**!#
- plot %3%^%s%I$N3F4X?t$K%*%W%7%g%s$H$7$FIA2hHO0O$rA0CV;XDj$G$-$^$9!#$3$l$O!"plot A4BN$NHO0O$K$O1F6A$;$:!"$=$N4X?t$N%G!<%?$r%5%s%W%j%s%0$9$kHO0O$G$7$+$"$j$^$;$s!#0J2<;2>H: **plot**, **piecewise.dem**!#
- 30It%i%$%V%i%j libcerf $,MxMQ2DG=$G$"$l$P!"$=$l$OJ#AG?t3X4X?t cerf, cdawson, erfi, faddeeva, $*$h$S Voigt %W%m%U%!%$%k VP(x,sigma,gamma) $rDs6!$9$k$N$K;H$o$l$^$9!#
- %3%^%s%I **import** $O!"30It6&M-%*%V%8%'%/%H(%5%]!<%H$O%*%Z%l!<%F%#%s%0%7%9%F%`0MB8) $,Ds6!$9$k4X?t$K%f!<%6Dj5A4X?tL>$r3d$jEv$F$^$9!#E,Ev$J30It6&M-%*%V%8%'%/%H$r:n$k$?$a$N%F%s%W%l!<%H%X%C%@%U%!%$%k!"%5%s%W%k%=!<%9!"makefile $J$I$, demo $NCf$K$"$j$^$9!#
- BPOC:n6H$NMzNr0lMwFb$ND>A0$N%3%^%s%I$O!"HV9f$G:F<B9T$G$-$^$9!#Nc$($P **history !5** $O!"**history** $N0lMwFb$N5 HV$N%3%^%s%I$r:F<B9T$7$^$9!#
- %S%C%H%7%U%H1i;;;R>> $H<<!#
- gnuplot $N%7%'%k8F$S=P$7$G gnuplot %9%/%j%W%H$K%Q%i%a!<%?$rEO$;$^$9!#gnuplot -c scriptfile.gp ARG1 ARG2 ARG3 ...

## %P!<%8%g%s 4 $H$N0c$$ (Differences from version 4)

%P!<%8%g%s 5 $GF3F~$5$l$?$$$/$D$+$NJQ99$O!"A0$NHG$N gnuplot MQ$N%9%/%j%W%H$N5sF0$rJQ$($k2DG=@-$,$"$j$^$9!#

* NaN $d!"@5$7$/$J$$%G!<%?Ns?t!"$^$?$OB>$NM=4|$7$J$$$b$N$r4^$`F~NO%G!<%?$N=hM}$N2~NI!#Nc($d?^) $K$D$$$F$O!"0J2<;2>H: **missing (p. 123)**!#

* ;~4V:BI8$O!"I8=`E*$J Unix %(%]%C%/(1970 G/1 7n1 F|) $+$i$NIC?t$H$7$FFbIt$GJ]B8$7$^$9!#0JA0$NHG$N gnuplot $G$O!"JL$N%(%]%C%/(2000 G/1 7n1 F|) $rFbIt$G;HMQ$7$F$$$^$7$?!#$3$NJQ99$O!"gnuplot $N30$G:n$i$l$?ICC10L$N%G!<%?$K$h$C$FL7=b$,$b$?$i$5$l$kLdBj$r2r7h$7$^$9!#%$%s%9%H!<%k$5$l$F$$$k8D!9$N gnuplot $,$I$A$i$N%(%]%C%/$r;HMQ$7$F$$$k$+$K$D$$$F$O!"%3%^%s%I **print strftime("%F",0)** $GCN$k$3$H$,$G$-$^$9!#8=:_$O!";~4V$O>/$J$/$H$b%_%jIC$N@:EY$GJ]B8$5$l$^$9!#

* 4X?t **timecolumn(N,"timeformat")** $O!"8=:_$O2 $D$N0z?t$r;}$A$^$9!#?7$7$$2 $DL\$N0z?t$O$I$N%G!<%?<4$H$b4XO"$7$F$*$i$:!"$h$C$F$3$l$K$h$j4X?t **timecolumn** $r!"x $d y <4$K;XDj$9$k$N$H$O0c$&7A<0$NF|;~%G!<%?$NFI$_9~$_$K;H$($k$h$&$K$J$j$^$9!#$3$N5!G=$O!"<!$N%3%^%s%INs$K<h$C$FJQ$o$j$^$9: **set xdata time; set timefmt "timeformat"**!#$3$l$O!"J#?t$N%U%!%$%k$+$i0[$J$k=q<0$NF|;~%G!<%?$rFI$s$G!"$=$l$i$rAH$_9g$o$;$F1 $D$N%0%i%U$K$9$k$3$H$r2DG=$K$7$^$9!#

* %3%^%s%I **set [axis]range** $N%-!<%o!<%I **reverse** $O!"<+F0=L<\(autoscaling) $K$N$_1F6A$7!"**set xrange [0:1]** $N$h$&$J%3%^%s%I$N0UL#$r5U$K$7$?$jB>$NJQ99$r9T$C$?$j$O$7$^$;$s!#$3$N$h$&$J>l9g$K x <4$NJ}8~$r5U8~$-$K$7$?$1$1$P!"Be$o$j$K **set xrange [1:0]** $H$7$F$/$@$5$$!#

* %3%^%s%I **call** $O!"JQ?t72 ARGC, ARG0, ..., ARG9 $rDs6!$9$k$h$&<BAu$5$1$F$$$^$9!#ARG0 $O!"<B9T$9$k%9%/%j%W%HL>$r;XD$7$^$9!#ARG1 $+$i ARG9 $OJ8;zNsJQ?t$K$J$k$N$G!"D>@\;2>H$9$k$+!"$^$?$ONc$($P @ARG1 $N$h$&$K%^%/%mE83+$5$;$?$b$N$r;2>H$9$k$3$H$,$G$-$^$9!#call $N8E$$%Q%i%a!<%?;2>H7A<0 $0 ... $9 $O8=:_$OHs?d>)$G$9!#

* %*%W%7%g%s smooth $N kdensity $N!"bandwidth $ND12C;XD$j$G$O!"%G!<%?Ns$+$i$G$J$/ 1 $D$N%-!<%o!<%I$H$7$FCM$r<h$j$^$9!#0J2<;2>H: **smooth kdensity (p. 96)**!#

## Hs?d>)$J=q<0 (Deprecated syntax)

0JA0$NHG$G;H$o$l$F$$$?$$$/$D$+$N=q<0$O gnuplot 4 $GHs?d>)$H$J$j$^$7$?$,!"8eJ}8_49@-$r;}$?$;$k$?$a$N%3%s%Q%$%k;~$N%*%W%7%g%s$,MQ0U$5$l$F$$$^$9!#8E$$=q<0$N%5%]!<%H$O8=:_$O:o=|$5$l$F$$$^$9!#

gnuplot 4 $G$OHs?d>)$G!"%P!<%8%g%s 5 $G$O:o=|:

```
set title "Old" 0,-1
set data linespoints
plot 1 2 4                # y=1 $G$N?eJ?@~
```

8=:_$NF1Ey$N5!G=:

```
TITLE = "New"
set title TITLE offset char 0, char -1
set style data linespoints
plot 1 linetype 2 pointtype 4
```

%P!<%8%g%s 5.0 $G$O –enable-backwards-compatibility $G9=C[$5$l$?>l9g$O;H$($k$,Hs?d>):

```
if (defined(VARNAME)) ...
set style increment user
plot 'file' thru f(x)
call 'script' 1.23 ABC
   (in script:  print $0, "$1", "number of args = $#")
```

8=:_$NF1Ey$N5!G=:

```
if (exists("VARNAME")) ...
set linetype
plot 'file' using 1:(f(column(2)))
call 'script' 1.23 "ABC"
   (in script:  print ARG1, ARG2, "number of args = ", ARGC
```

## %G%b!"%M%C%H>e$N%5%s%W%k (Demos and Online Examples)

**gnuplot** $NG[I[J*$N **demo** %G%#%l%/%H%j$Fb$K$O!"B?$/$N%5%s%W%k$,<}$a$i$l$F$$$^$9!#$3$l$i$N%5%s%W%k$N png, svg, canvas =PNO7A<0$K$h$k=PNO$r!"0J2<$N%M%C%H>e$G8+$k$3$H$b$G$-$^$9: http://gnuplot.info/demos

$=$3$G$O!"3F%G%b$r:n@.$9$k%3%^%s%I$,%0%i%U$NNY$j$KI=<($5$l$^$9$7!"$=$N gnuplot %9%/%j%W%H$r%@%&%s%m!<%I$9$k$3$H$b$G$-$^$9$N$G!"$=$l$rJ]B8$7F1MM$N%0%i%U$r:n@.$9$k$3$H$,$G$-$^$9!#

## %P%C%A/BPOC7?A`:n (Batch/Interactive)

**gnuplot** $OB?$/$N%7%9%F%`>e$G!"%P%C%A=hM}7A<0!"$"$k$$$OBPOC7?$N$I$A$i$N7A<0$G$b<B9T$G$-!"$=$l$i$rAH$_9g$o$;$k$3$H$b2DG=$G$9!#

%3%^%s%I%i%$%s0z?t$O!"%W%m%0%i%`$X$N%*%W%7%g%s(J8;z-$G;O$^$k)$+!"**gnuplot** %3%^%s%I$r4^$`%U%!%$%k$NL>A0$G$"$k$H2r<a$5$l$^$9!#-e "command" $N7A<0$N%*%W%7%g%s$O!"gnuplot %3%^%s%I$r6/@)E*$K<B9T$5$;!"3F%U%!%$%k$H$3$N%3%^%s%IJ8;zNs$O!";XDj$5$l$?=g$K<B9T$5$l$^$9!#FCJL$J%U%!%$%kL> "-" $O!"%3%^%s%I$rI8=`F~NO$+$iFI$_9~$`$3$H$r0UL#$7$^$9!#:G8e$N%U%!%$%k$r<B9T$7$?8e$K **gnuplot** $O=*N;$7$^$9!#FI$_9~$^$;$k%U%!%$%k!"$*$h$S%3%^%s%IJ8;zNs$r;XDj$7$J$+$C$?>l9g$O!"**gnuplot** $OI8=`F~NO$+$i$NBPOC7?$NF~NO$r<u$1IU$1$^$9!#

**exit** $H **quit** $O$I$A$i$b8=:_$N%3%^%s%I%U%!%$%k$r=*N;$7!"$^$@A4$F$N%U%!%$%k$,=*$C$F$$$J$1$l$P!"<!$N%U%!%$%k$r **load** $9$k$N$K;H$o$l$^$9!#

Nc:

BPOC$r3+;O$9$k:

```
gnuplot
```

2 $D$N%3%^%s%I%U%!%$%k "input1", "input2" $r;H$C$F%P%C%A=hM}$r9T$J$&:

```
gnuplot input1 input2
```

=i4|2=%U%!%$%k "header" $N8e!"BPOC7?%b!<%I$r5/F0$7!"$=$N8eJL$N%3%^%s%I%U%!%$%k "tailer" $r<B9T$9$k:

```
gnuplot header - trailer
```

%3%^%s%I%i%$%s$+$i **gnuplot** %3%^%s%I$rD>@\M?$(!"=*N;8e$K%9%/%j!<%s>e$K%0%i%U$,;D$k$h$&$K%*%W%7%g%s "-persist" $r;H$&:

```
 gnuplot -persist -e "set title 'Sine curve'; plot sin(x)"
```

%U%!%$%k$N%3%^%s%I$r<B9T$9$kA0$K!"%f!<%6Dj5AJQ?t a $H s $r%;%C%H$9$k:

```
gnuplot -e "a=2; s='file.png'" input.gpl
```

## %-%c%s%P%9%5%$%: (Canvas size)

gnuplot $N0JA0$NHG$G$O!"**set size** $NCM$r!"=PNO$9$kIA2hNN0h(%-%c%s%P%9)$N%5%$%:$r@)8f$9$k$N$K$b;H$C$F$$$?=PNO7A<0$b$"$j$^$7$?$,!"$9$Y$F$N=PNO7A<0$,$=$&$@$C$?$o$1$G$O$"$j$^$;$s$G$7$?!#$3$NL\E*$N$?$a$K **set size** $r;HMQ$9$k$3$H$O%P!<%8%g%s 4.2 $GHs?d>)$H$J$j!"8=:_$O$[$H$s$I$N=PNO7A<0$,0J2<$N%k!<%k$K=>$$$^$9:

**set term <terminal_type> size <XX>, <YY>** $O!"=PNO%U%!%$%k$N%5%$%:!"$^$?$O"%-%c%s%P%9" $N%5%$%:$r@)8f$7$^$9!#%G%U%)%k%H$G$O!"%0%i%U$O$=$N%-%c%s%P%9A4BN$KIA2h$5$l$^$9!#

**set size <XX>, <YY>** $O!"IA2h<+BN$r%-%c%s%P%9$N%5%$%:$KBP$7$FA jBPE*$K?-=L$5$;$^$9!#1 $h$j>.$5$$?-=LCM$r;XDj$9$k$H!"%0%i%U$O%-%c%s%P%9A4BN$rKd$a$:!"1 $h$jBg$-$$?-=LCM$r;XDj$9$k$H!"%0%i%U$N0lItJ,$N$_$,%-%c%s%P%9A4BN$K9g$&$h$&$KIA2h$5$l$^$9!#1 $h$jBg$-$$?-=LCM$r;XDj$9$k$H!"LdBj$,5/$3$k$+$b$7$l$J$$$3$H$KCm0U$7$F$/$@$5$$!#

$3$N%k!<%k$K1h$o$J$$<g$JNc30$O PostScript %I%i%$%P$G!"%G%U%)%k%H$G$O0JA0$NHG$HF1$8?6Iq$$$r$7$^$9$,!">-Mh$O PostScript %I%i%$%P$bF1MM$K%G%U%)%k%H$N?6Iq$$$rJQ99$9$k$3$H$K$J$k$G$7$g$&!#

Nc:

```
set size 0.5, 0.5
set term png size 600, 400
set output "figure.png"
plot "data" with lines
```

$3$N%3%^%s%I$O!"I}600 %T%/%;%k!"9b$5 400 %T%/%;%k$N=PNO%U%!%$%k"figure.png" $r@8@.$7$^$9!#%0%i%U$O%-%c%s%P%9$NCf$N:82<$KCV$+$l$^$9!#$3$l$O!"multiplot %b!<%I$,>o$K9T$C$F$-$?J}K!$HL7=b$7$^$;$s!#

## %3%^%s%I%i%$%sJT=8 (Command-line-editing)

%3%^%s%I%i%$%s$G$NJT=85!G=$H%3%^%s%IR%9%H%j$N5!G=$O!"30It$N GNU readline %i%$%V%i%j$+30It$N BSD libedit %i%$%V%i%j!"$^$?$OAH$_9~$^$l$F$$$kF1Ey$N$b$N$N$$$:$l$+$r;H$C$F%5%]!<%H$7$F$$$^$9!#$3$NA*Br$O!"gnuplot $N%3%s%Q%$%k;~$N configure $N%*%W%7%g%s$G9T$$$^$9!#

AH$_9~$_$N readline HG$N>19g$NJT=8%3%^%s%I$O0J2<$NDL$j$G$9$,!"DEL %-!<$K4X$9$kF0:n$O%7%9%F%`$K0MB8 $9$k$3$H$KCm0U$7$F$/$@$5$$!#GNU readline %i%$%V%i%j$H BSD libedit %i%$%V%i%j$K4X$7$F$O!"$=$l<+?H$N %I%-%e%a%s%H$r;2>H$7$F$/$@$5$$!#

<table>
<tr><th colspan="2">%3%^%s%I9TJT=8%3%^%s%I</th></tr>
<tr><td>J8;z</td><td>5!G=</td></tr>
<tr><td></td><td>9TJT=8</td></tr>
<tr><td>^B</td><td>1 J8;zA0$XLa$9</td></tr>
<tr><td>^F</td><td>1 J8;z@h$X?J$a$k</td></tr>
<tr><td>^A</td><td>9T$N@hF,$X0\F0</td></tr>
<tr><td>^E</td><td>9T$N:G8e$X0\F0</td></tr>
<tr><td>^H</td><td>D>A0$NJ8;z$r:o=|</td></tr>
<tr><td>DEL</td><td>8=:_$NJ8;z$r:o=|</td></tr>
<tr><td>^D</td><td>8=:_0LCV$NJ8;z$r:o=|!"6u9T$J$i EOF</td></tr>
<tr><td>^K</td><td>8=:_0LCV$+$i9TKv$^$G:o=|</td></tr>
<tr><td>^L</td><td>2u$l$?I=<($N9T$r:FI=<(</td></tr>
<tr><td>^U</td><td>9TA4BN$N:o=|</td></tr>
<tr><td>^W</td><td>D>A0$NC18l$r:o=|</td></tr>
<tr><td>^V</td><td>$3$N<!$N%-!<$rJT=8%3%^%s%I$H8+$J$5$J$$</td></tr>
<tr><td>TAB</td><td>%U%!%$%kL>Jd40F0:n</td></tr>
<tr><td></td><td>MzNr</td></tr>
<tr><td>^P</td><td>A0$NMzNr$X0\F0</td></tr>
<tr><td>^N</td><td><!$NMzNr$X0\F0</td></tr>
<tr><td>^R</td><td>8eJ}8!:w$r3+;O</td></tr>
</table>

## %3%a%s%H (Comments)

%3%a%s%H5-9f # $O!"%3%^%s%I9TCf$N$[$H$s$I$I$3$K$G$b=q$/$3$H$,$G$-$^$9!#$3$N$H$-gnuplot $O!"$=$N9T $N;D$j$NItJ,$rL5;k$7$^$9!#$?$@$7!"5-9f # $O0zMQId Fb$G$O$3$N8z2L$,$"$j$^$;$s!#%3%a%s%H9T$, '\' $G=* $o$C$F$$$k>l9g!"<!$N9T$b%3%a%s%H$N0lIt$H$7$F07$o$l$k$3$H$KCm0U$7$F$/$@$5$$!#

%G!<%?%U%!%$%k$KBP$9$k%3%a%s%HJ8;z$N;XDj$K$D$$$F$O!"0J2<;2>H: **set datafile commentschars (p. 125)**!#

## :BI870 (Coordinates)

%3%^%s%I **set arrow**, **set key**, **set label**, **set object** $O%0%i%U>e$NG$0U$N0LCV$,;XDj$G$-$^$9!#$=$N0LCV$O 0J2<$N=q<0$G;XDj$7$^$9:

```
{<system>} <x>, {<system>} <y> {,{<system>} <z>}
```

3F:BI870;XDj <system> $K$O!"**first**, **second**, **polar**, **graph**, **screen**, **character** $N$$:$l$+$,F~$j$^$9!#

**first** $O:8$H2<$N<4$GDj5A$5$l$k x,y (3D $N>l9g$O z $b) $N:BI870$r;HMQ$7$^$9!#**second** $O x2, y2 <4 (>e$H1& $N<4) $r;HMQ$7$^$9!#**graph** $O%0%i%UIA2hNN0hFb$NAjBPE*0LCV$r;XDj$7!":82<$, 0,0 $G 1&>e$, 1,1 (splot $N >l9g$O%0%i%UIA2hNN0hFb$N:82<$, 0,0,0 $G!"EZBf$N0LCV$OI i$N z $NCM$r;HMQ$7$^$9!#0J2<;2>H: **set xyplane (p. 191)**) $H$J$j$^$9!#**screen** $OI=<(HC0CFb(HC0CA4BN$G$"$j!"**set size** $GA*Br$5$l$k0lItJ,$G$O$"$j$^$;$s) $r;XDj$7!":82<$, 0,0 $G 1&>e$, 1,1 $H$J$j$^$9!#**character** :BI8$O<g$K$ :$l$r;XDj$9$k$N$K;HMQ$7!"@dBPE*$J 0LCV$r<($9$b$N$G$O$"$j$^$;$s!#**character** $N?eJ?!"?bD>%5%$%:$O!"8=:_;HMQ$7$F$$$k%U%)%s%H$K0MB8$7$^$9!#

**polar** $O!":G=i$N 2 $D$NCM$r!"x, y $G$O$J$/!"3Q theta $HH>7B r $G$"$k$H2r<a$7$^$9!#$3$l$O!"Nc$($P 2 <! 85$N6K:BI8!"$"$k$$$O 3 <!851_Cl:BI8$G$N%0%i%U$K%i%Y%k$rG[CV$9$k$N$KLr$KN)$D$G$7$g$&!#

x $N:BI870$,;XDj$5$l$F$$$J$$>l9g$O **first** $,;H$o$l$^$9!#y $N:BI870$,;XDj$5$l$F$$$J$$>l9g$O x $KBP$9$k :BI870$,;HMQ$5$l$^$9!#

M?$($k:BI8$,@dBPE*$J0LCV$G$O$J$/$FAjBPE*$JCM$G$"$k>l9g$b$"$j$^$9 (Nc$($P **set arrow** ... **rto** $N 2 HVL\ $N?tCM)!#$=$N$[$H$s$I$,!"M?$($i$l$??tCM$r:G=i$N0LCV$KBP$9$k: 9$H$7$F;H$$$^$9!#M?$($i$l$?:BI8$,BP?t<4 Fb$K$"$k>l9g$O!"$=$NAjBPE*$JCM$OG\N($H$7$F2r<a$5$l$^$9!#Nc$($P

```
set logscale x
set arrow 100,5 rto 10,2
```

$O!"x <4$,BP?t<4$Gy <4$,@~7A$N<4$J$N$G!"100,5 $N0LCV$+$i 1000,7 $N0LCV$X$NLp0u$r=q$/$3$H$K$J$j$^$9!#

0l$D($"$k$$$O$=$l0J>e) $N<4$,;~4V<4$G$"$k>l9g!"**timefmt** $N=q<0J8;zNs$K=>$C$F!"0zMQId$G0O$^$l$?;~4V J8;zNs$GE,@Z$J:BI8$r;XDj$9$kI,MW$,$"$j$^$9!#0J2<;2>H: **set xdata (p. 184)**, **set timefmt (p. 180)**!#$^ $?!"**gnuplot** $O@0?tI=5-$bG'$a$F$$$F!"$=$N>l9g$=$N@0?t$O 1970 G/1 7n1 F|$+$i$NIC?t$H2r<a$5$l$^$9!#

## J8;zNs%G!<%? (Datastrings)

%G!<%?%U%!%$%k$K$O!"%[%o%$%H%9%Z!<%9 (6uGr$d%?%V) $r4^$^$J$$G$0U$N0u;z2DG=$JJ8;zNs!"$"$k$$$O 2 =E0zMQId$G0O$^$l$?G$0U$NJ8;zNs (%[%o%$%H%9%Z!<%9$,4^$^$l$F$bNI$$)!"$N$$:$l$+$N7A$+$i$J$kJ8;zNs%G!<%?$r;}$?$;$k$3$H$b2DG=$G$9!#%G!<%?%U%!%$%k$K<!$N$h$&$J9T$,4^$^$l$F$$$k>l9g!"$=$l$O 4 $D$NNs$r4^$_!"3 NsL\$,%F%-%9%HItJ,$G$"$k$H8+$J$5$l$^$9:

```
1.000 2.000 "Third column is all of this text" 4.00
```

%F%-%9%HItJ,$O 2 <!85$d 3 <!85IA2hFb$GNc$($P0J2<$N$h$&$K;HMQ$5$l$^$9:

```
plot 'datafile' using 1:2:4 with labels
splot 'datafile' using 1:2:3:4 with labels
```

%F%-%9%HItJ,$NNs%G!<%?$O 1 $D!"$^$?$OJ#?t$NIA2h<4$NL\@9$j$N%i%Y%k$H$7$F;HMQ$G$-$^$9!#<!$NNc$O!"F~NO%G!<%?$N 3 NsL\$H 4 NsL\$r (X,Y) :BI8$H$7$F<h$j=P$7!"$=$l$i$NE@$NNs$r7k$V@~J,$rIA2h$7$^$9!#$7$+$7$3$N>l9ggnuplot $O!"x <4$K1h$C$FI8=`E*$K4V$N6u$$$??t;z%i%Y%k$N$D$$$?L\@9$j9o$_$r$D$1$k$N$G$O$J$/!"F~NO%G!<%?%U%!%$%k$N 1 9TL\$N X :BI8$N0LCV$K!"L\@9$j9o$_$HJ8;zNs$r x <4$K1h$C$F$D$1$F9T$-$^$9!#

```
set xtics
plot 'datafile' using 3:4:xticlabels(1) with linespoints
```

F~NO%G!<%?$NNs$N:G=i$N% (%s%H%j ($9$J$o$ANs$N8+=P$7) $r%F%-%9%HItJ,$H2r<a$9$k$b$&0l$D$N%*%W%7%g%s$,$"$j!"$=$l$O%F%-%9%HItJ,$r!"$=$NIA2h$7$?Ns$N%G!<%?$NK^Nc (key) $N%?%$%H%kItJ,$H$7$F;HMQ$7$^$9!#<!$NNc$O!"@hF,$N9T$N 2 NsL\$NItJ,$rK^Nc%\%C%/%9Fb$N%?%$%H%k$r@8@.$9$k$N$K;HMQ$7!"$=$N8e$NNs$N 2,4 NsL\$OMW5a$5$l$?6J@~$rIA2h$9$k$N$K=hM}$5$l$^$9:

```
plot 'datafile' using 1:(f($2)/$4) with lines title columnhead(2)
```

JL$NNc:

```
plot for [i=2:6] 'datafile' using i title "Results for ".columnhead(i)
```

$3$NNs$N@hF,$r;HMQ$9$kJ}K!$O!"**set key autotitle columnhead** $G<+F02=$G$-$^$9!# 0J2<;2>H: **labels (p. 64)**, **using xticlabels (p. 100)**, **plot title (p. 105)**,**using (p. 98)**, **key autotitle (p. 139)**!#

## 3HD%J8;zNs=hM}%b!<%I (Enhanced text mode)

B?$/$N=PNO7A<0$,!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $r%5%]!<%H$7$F$$$^$9!#$3$l$O!"J8;zNs$KDI2C$N=q<0>pJs$rKd$a$3$_$^$9!#Nc$($P "x^2" $O x $N<+>h$r!"DL>o2f!9$,8+$k>eIU$-$N 2 $,$D$$$?7A$G=q$-=P$7$^$9!#$3$N%b!<%I$O!"=PNO7A<0$N@_Dj;~$K%G%U%)%k%H$H$7$FA*Br$5$l$^$9$,!"$=$N8e$G"set termoption [no]enhanced" $r;H$C$F$=$N5!G=$rM-8z/L58z$K$b$G$-$^$9$7!""set label 'x_2' noenhanced" $N$h$&$K8D!9$NJ8;zNs$KE,MQ$9$k$3$H$b$G$-$^$9!#

| 3HD%J8; zNs@)8f5-9f | | | |
|---|---|---|---|
| @)8f5-9f | Nc | 7k2L | @bL@ |
| ^ | `a^x` | $a^x$ | >eIU$-J8; z |
| _ | `a_x` | $a_x$ | 2<IU$-J8; z |
| @ | `a@^b_{cd}` | $a^b_{cd}$ | 6u%\%C%/%9 (I}$,$J$$) |
| & | `d&{space}b` | d␣␣␣␣␣␣b | ;XDj$7$?D9$5$N%9%Z!<%9$rA^F~ |
| ~ | `~a{.8-}` | $\tilde{a}$ | 'a' $N>e$K '-' $r!"8=:_$N%U%)%s%H%5 %$%:$N.8 G\; }$A>e$2$?0LCV$K=E$M=q$- |
| | `{/Times abc}` | abc | Times %U%)%s%H!":#$N%5%$%:$G abc $r=PNO |
| | `{/Times*2 abc}` | abc | Times %U%)%s%H!":#$NG\$N%5%$%:$G abc |
| | `{/Times:Italic abc}` | *abc* | Times %U%)%s%H!"%$%?%j%C%/BN$G abc |
| | `{/Arial:Bold=20 abc}` | **abc** | Arial %U%)%s%H!"B@; z!"%5%$%: 20 $G abc |

=q<0@)8fJ8; z$O!"$=$1$KB3$/1 J8; z!"$^$?$OCf%+%C%3$G0O$^$l$?$b$N$KE,MQ$5$l$^$9!#Cf%+%C%3Fb$K$O!"Nc$($P 2^{10} $N$h$&$JDI2C$N=q<0J8; zNs$N$J$$J8; zNs$+!"$^$?$O%U%)%s%H$NB0@-$rJQ99$9$k$DI2C@)8fJ8; zNs$rF~$l$k$3$H$,$G$-$^$9!#0J2<$NNc$O$=$NCf%+%C%3$NF~$l; R$r< ($7$F$$$F!"%\!<%k%IBN$N A $K%$%?%j%C%/BN$N2<IU$-$NE:; z i $,$D$$$?$b$N$,!"$$$:$l$b8=:_$N%U%)%s%H$GIA$+$l$^$9!#$3$NNc$N :Normal $r<h$k$H!"2<IU$-$NE:; z$O%\!<%k%IBN$G$+$D%$%?%j%C%/BN$K$J$j$^$9!#

```
{/:Bold A_{/:Normal{/:Italic i}}}
```

%U%)%s%H; XDj$O!"3+$-Cf%+%C%3 '{' $ND>8e$KB3$/ '/' $N$9$0<!$K=q$+$J$1$l$P!V$$$1$^$;$s!W#

6u%\%C%/%9 (phantom box) $O a@^b_c $N>eIU$-J8; z$H2<IU$-J8; z$rB7$($k$H$-$KM-MQ$G$9$,!"J8; z$K%"%/%;%s%H5-9f$r=E$M$k>l9g$K$O$&$^$/F/$-$^$;$s!#8e<T$NL\E*$N$?$a$K$O!"?'!9$J%"%/%;%s%H$d$=$NB>$N%@%$%"%/%j%F%#%+%k%^!<%/$N$"$kB?$/$NJ8; z$r; }$D% (%s%3!<%I (Nc$($P iso_8859_1 $d utf8) $r; HMQ$9$kJ}$,$$$$$G$7$g$&!#0J2<; 2>H: **set encoding (p. 128)**!#$=$N%\%C%/%9$O%9%Z!<%7%s%0$,9T$J$o$1$J$$$N$G!"%\%C%/%9Fb ($D$^$j @ $N8e$m) $N>eIU$-J8; z$d2<IU$-J8; z$rC;$/=PNO$9$k$N$KE,$7$F$$$^$9!#

$"$kJ8; zNs$HF1$8D9$5$N%9%Z!<%9$rJ8; z '&' $r; H$&$3$H$GF~$l$k$3$H$,$G$-$^$9!#$9$J$o$A!"

```
'abc&{def}ghi'
```

$O0J2<$r@8@.$7$^$9 (abc $H ghi $N4V$O 3 J8; zJ,$N6uGr):

```
'abc   ghi'
```

J8; z '~ ' $O!"<!$NJ8; z!"$^$?$O%+%C%3$G0O$^$l$?J8; zNs$K!"$=$l$KB3$/J8; z$^$?$O%+%C%3$G0O$^$l$?J8; zNs$r=E$M=q$-$7$^$9!#2 HVL\$NJ8; z$O:G=i$NJ8; z$K$"$o$;$F?eJ?J}8~$K%;%s%?%j%s%0$5$l$^$9!#$h$C$F '~ a/' $O 'a' $r4S$/$h$&$J%9%i%C%7%e$,F@$i$l$^$9!#2 HVL\$NJ8; z$O!"$=$NA0$K?t; z$rCV$/$3$H$G?bD>J}8~$K0\F0$5$;$k$3$H$,$G$-$^$9!#$=$N?t; z$O8=:_$N%U%)%s%H%5%$%:$KBP$9$k3d9g$r0UL#$7!"$=$l$K=>$C$FJ8; z$,>e$,$C$?$j2<$,$C$?$j$7$^$9!#$3$N>l9g?t; z$HJ8; zNs$O 1 J8; z$h$jD9$/$J$k$N$G%+%C%3$G0O$`I,MW$,$"$j$^$9!#=E$M=q$-$5$l$kJ8; zNs$,?t; z$+$i;O$^$C$F$$$k>l9g$O!"?bD>$K$:$i$9CM$HJ8; zNs$H$N4V$K%9%Z!<%9$rF~$l$F$/$@$5$$ ('~ {abc}{.5 000}')!#$=$10J30$O%9%Z!<%9$OITMW$G$9 ('~ {abc}{.5 — }')!#0lJ}!"$"$k$$$ON>J}$N%U%)%s%H$rJQ99$9$k$3$H$b$G$-$^$9 ('~ a{.5 /*.2 o}'; 'a' $=$N 1/5 $NBg$-$5$N 'o'!"$3$N>l9g?t; z$H%9%i%C%7%e$N4V$N%9%Z!<%9$OI,MW$G$9) $,!"$=$NJ8; zNs$,; O$^$C$?8e$GJQ99$9$k$3$H$O$G$-$^$;$s!#$=$1$>$1$NJ8; zNsFb$G!"B>$NFC<l$J=q<0$r; H$&$3$H$b$G$-$^$;$s!#$b$A$m$s!"'~ a{\^}' $N$h$&$KFC<l$JJ8; z$r% (%9%1!<%W$9$k$3$H (2<5-; 2>H) $O2DG=$G$9!#

FC<l5-9f$O!"8 ?JJ8; z%3!<%I$rM?$($k$3$H$G?t; z$G; XDj$G$-$^$9!#Nc$($P!"{/Symbol \245} $O!"Adobe Symbol %U%)%s%H$NL58BBg$N5-9f$G$9!#$7$+$7!"$3$l$O!" UTF-8 $N$h$&$J%^%k%A%P%$%H% (%s%3!<%G%#%s%0$G$O$&$^$/$$$-$^$;$s!#UTF-8 4D6-$G$O!"%?%$%WBG$A!"$=$&$G$J$1$l$P$"$J$?$,K>$`J8; z$rA*$V$h$&$JJ}K!$G!"%^%k%A%P%$%HNs$r4V@\E*$KF~NO$G$-$k$h$&$K$9$Y$-$G$9!#

@)8fJ8; z$O!" \\ $d \{ $J$I$N$h$&$K \ $r; H$C$F% (%9%1!<%W$G$-$^$9!#

Fs=E0zMQIdFb$NJ8; zNs$OC10 10zMQIdFb$NJ8; zNs$H$O0 [$J$C$F2r<a$5$l$k$3$H$KCm0U$7$F$/$@$5$$!#<g$J0c$$$O!" Fs=E0zMQIdFb$NJ8; zNs$G$O%P%C%/%9%i%C%7%e$O 2 $D=E$M$kI,MW$,$"$k$3$H$G$9!#

gnuplot %=!<%9G[I[J*Fb$N /docs/psdoc %5%V%G%#%l%/%H%j$K$"$k%U%!%$%k"ps_guide.ps" $K!"3HD%$5$l$?=q<0$K4X$9$kNc$,:\$C$F$$$^$9!#F1MM$N$b$N$,%G%b **enhanced_utf8.dem**

$K$b$"$j$^$9!#

## 4D6-JQ?t (Environment)

**gnuplot** $OB?$/$N%7%'%k4D6-JQ?t$rG'<1$7$^$9!#I,?\$N$b$N$O$"$j$^$;$s$,!";H$($PJXMx$K$J$k$+$bCN$l$^$;$s!#

GNUTERM $O!"$=$l$,Dj5A$5$l$F$$$l$P!"5/F0;~$N=PNO7A<0$r@_Dj$9$k$N$K;H$o$l$^$9!#%P!<%8%g%s 5.2 $+$i$O!"GNUTERM $NJ8;zNsA4It$, "set term" $KEO$5$l$k$N$G!"$=$3$K terminal %*%W%7%g%s$rF~$l$k$3$H$b$G$-$^$9!#Nc:

```
GNUTERM="postscript eps color size 5in, 3in"
```

$3$l$O!"~ /.gnuplot ($^$?$O$=$l$KAjEv$9$k) =i4|2=%U%!%$%k (0J2<;2>H: **startup (p. 47)**) $K$h$k;XDj$d!"$b$A$m$s$=$N8e$NL@<(E*$J **set term** %3%^%s%I$K$h$k;XDj$GJQ99$G$-$^$9!#

GNUHELP $K%X%k%W%U%!%$%k (gnuplot.gih) $N%Q%9L>$rDj5A$7$F$*$/$3$H$,$G$-$^$9!#

VMS $G$O!"O@M}L> GNUPLOT$HELP $r **gnuplot** $N%X%k%W%i%$%V%i%j$NL>A0$H$7$FDj5A$7$^$9!#**gnuplot** $N%X%k%W$OG$0U$N VMS %7%9%F%`$N%X%k%W%i%$%V%i%j$KF~$l$k$3$H$,$G$-$^$9!#

Unix $K$*$$$F$O!"%+%l%s%H%G%#%l%/%H%j$K .gnuplot $H$$$&%U%!%$%k$,$J$$>l9g$K$O!"HOME $KDj5A$5$l$?%G%#%l%/%H%j$rC5$7$^$9!#MS-DOS, Windows, OS/2 $G$O GNUPLOT $,$=$NLr3d$K;H$o$l$^$9!#Windows $G$O!"NT @lMQ$NJQ?t USERPROFILE $b;2>H$5$l$^$9!#VMS $G$O SYS$LOGIN $G$9!#**help startup** $HBG$C$F$_$F$/$@$5$$!#

Unix $K$*$$$F$O!"PAGER $,%X%k%W%a%C%;!<%8$N=PNOMQ$N%U%#%k%?$H$7$F;H$o$l$^$9!#

Unix $G$O!"SHELL $, **shell** %3%^%s%I$N:]$K;H$o$l$^$9!#MS-DOS, OS/2 $G$O COMSPEC $, **shell** %3%^%s%I$N:]$K;H$o$l$^$9!#

**FIT_SCRIPT** $O!"Ev$F$O$a (fit) $,CfCG$5$l$?$H$-$K<B9T$9$k **gnuplot** %3%^%s%I$N;XDj$K;H$o$l$^$9!#0J2<;2>H: **fit (p. 75)**!#**FIT_LOG** $OEv$F$O$a$K$h$k%m%0%U%!%$%k$N%G%U%)%k%H$N%U%!%$%kL>$N;XDj$K;H$o$l$^$9!#

GNUPLOT_LIB $O!"%G!<%?$d%3%^%s%I%U%!%$%k$N8!:w%G%#%l%/%H%j$rDI2CDj5A$9$k$N$K;H$o$l$^$9!#$=$NJQ?t$O!"0l$D$N%G%#%l%/%H%jL>$+$^$?$OJ#?t$N%G%#%l%/%H%jL>$r=q$/$3$H$,$G$-$^$9$,!"%G%#%l%/%H%j$N6h@Z$j$O%W%i%C%H%[!<%`Kh$K0c$$$^$9!#Nc$($P Unix $G$O':' $G!"MS-DOS, Windows, OS/2 $G$O';' $G$9!#GNUPLOT_LIB $NCM$OJQ?t **loadpath** $KDI2C$5$l$^$9$,!"$=$l$O **save** $d **save set** %3%^%s%I$G$OJ]B8$5$l$^$;$s!#

=PNO%I%i%$%P$NCf$K$O gd %i%$%V%i%j7PM3$G TrueType %U%)%s%H$r07$($k$b$N$b$$$/$D$+$"$j$^$9!#$3$l$i$N%I%i%$%P$N%U%)%s%H8!:w%Q%9$O!"4D6-JQ?t GDFONTPATH $G@)8f$G$-$^$9!#$5$i$K!"$=$l$i$N%I%i%$%P$G$N%G%U%)%k%H$N%U%)%s%H$O4D6-JQ?t GNUPLOT_DEFAULT_GDFONT $G@)8f$G$-$^$9!#

postscript =PNO%I%i%$%P$O<+J,$G;}$C$F$$$k%U%)%s%H8!:w%Q%9$r;H$$$^$9$,!"$=$l$O4D6-JQ?t GNUPLOT_FONTPATH $G@)8f$G$-$^$9!#=q<0$O GNUPLOT_LIB $HF1$8$G$9!#GNUPLOT_FONTPATH $NCM$OJQ?t **fontpath** $KDI2C$5$l$^$9$,!"$=$l$O **save** $d **save set** %3%^%s%I$G$OJ]B8$5$l$^$;$s!#

PostScript %I%i%$%P$O!"30It (AH$_9~$^$l$F$$$J$$) Dj5A%U%!%$%k$rC5$9$?$a$K4D6-JQ?t GNUPLOT_PS_DIR $rMxMQ$7$^$9!#%$%s%9%H!<%k;~$N:n6H$K$h$j!"gnuplot $K$O$=$l$i$N%U%!%$%k$N%3%T!<$,AH$_9~$^$l$F$$$k$+!"$^$?$O%G%U%)%k%H$N%Q%9$,Kd$a9~$^$l$F$$$^$9!#$3$NJQ?t$O!"postscript =PNO7A<0$G%G%U%)%k%H$N%U%!%$%k$NBe$o$j$K%+%9%?%^%$%:$7$? prologue %U%!%$%k$r;HMQ$9$k$N$KMxMQ$G$-$^$9!#0J2<;2>H: **postscript prologue (p. 245)**!#

## <0 (Expressions)

4pK\E*$K$O C, FORTRAN, Pascal, BASIC $K$*$$$FMxMQ2DG=$J?t3XI=8=$r;HMQ$G$-$^$9!#1i;;R$NM%@h=g0L$O C 8@8l$N;EMM$K=>$$$^$9!#?t<0Cf$N6uGrJ8;z$H%?%VJ8;z$OL5;k$5$l$^$9!#

gnuplot $O "<B?t" $H "@0?t" 1i;;$r FORTRAN $d C $N$h$&$K07$&$H$$$&$3$H$KCm0U$7$F$/$@$5$$!#"1", "-10" $J$I$O@0?t$H8+$J$5$l!""1.0", "-10.0", "1e1", 3.5e-1 $J$I$O<B?t$H8+$J$5$l$^$9!# $3$l$i 2 $D$N$b$C$H$b=EMW$J0c$$$O3d;;$G$9!#@0?t$N3d;;$O@Z$j<N$F$i$l$^$9: 5/2 = 2!#<B?t$O$=$&$G$O$"$j$^$;$s: 5.0/2.0 = 2.5!#$=$l$i$,:.:_$7$?<0$N>l9g!"7W;;$NA0$K@0?t$O<B?t$K "3HD%" $5$l$^$9: 5/2e0 = 2.5!#Ii$N@0?t$r@5$N@0?t$G3d$k>l9g!"$=$NCM$O%3%s%Q%$%i$K$h$C$FJQ$o$j$^$9!#"print -5/2" $H$7$F!"$"$J$?$N%7%9%F%`$,>o$K@Z$j<N$F$k (-5/2 $G -3 $K$J$k) $N$+!"$^$?$O 0 $N6a$/$K4]$a$k (-5/2 $G -2 $K$J$k) $N$+$r3NG'$7$F$/$@$5$$!#

?t<0 "1/0" $O "L$Dj5ACM (undefined)" %U%i%0$r@8@.$7!"$=$l$K$h$j$=$NE@$rL5;k$7$^$9!#$"$k$$$O!"$"$i$+$8$aDj5A$5$l$F$$$kCM NaN $r;H$C$F$bF1$8$3$H$K$J$j$^$9!#Nc$K$D$$$F$O!"0J2<;2>H: **using (p. 98)**!#

gnuplot $OJ8;zNs$KBP$9$kC1=c$J1i;;!"$*$h$SJ8;zNsJQ?t$bMxMQ$G$-$^$9!#Nc$($P<0("A" . "B" eq "AB") $O??$HI>2A$5$l$^$9$,!"$3$l$OJ8;zNs$N7k9g1i;;R$HJ8;zNs$NEy9f1i;;R$r0UL#$7$F$$$^$9!#

?t$H$7$F$NCM$r4^$`J8;zNs$O!"$=$l$,?t<0$GMxMQ$5$l$?>l9g$O!"BP1~$9$k@0?t$d<B?t$KJQ49$5$l$^$9!#$h$C$F!"("3" + "4" == 7) $d(6.78 == "6.78") $O$I$A$i$b??$K$J$j$^$9!#@0?t$O!"$=$l$,J8;zNs7k9g1i;;R$G;H$o$l$?>l9g$OJ8;zNs$KJQ49$5$l$^$9$,!"<B?t$dJ#AG?t$O%@%a$G$9!#E57?E*$JNc$O!"%U%!%$%kL>$dB>$NJ8;zNsFb$K@0?t$r;H$&>l9g$G$7$g$&: Nc$($P("file" . 4 eq "file4") $O??$G$9!#

8eCV;XDj$9$kHO0O5-=R;R[beg:end] $K$h$C$F!"ItJ,J8;zNs$r;XDj$9$k$3$H$,$G$-$^$9!#Nc$($P!""ABCDEF"[3:4] == "CD" $G!""ABCDEF"[4:*] == "DEF" $G$9!#=q<0"string"[beg:end] $O!"J8;zNsCM$NAH$_9~$_4X?tsubstr("strings",beg,end) $r8F$V$3$H$H$[$\F1$8$G$9$,!"4X?t8F$S=P$7$G$Obeg, end $O>JN,$9$k$3$H$O$G$-$^$;$s!#

## Dj?t (Constants)

@0?tDj?t$O!"C $Nstrtoll() %i%$%V%i%j%k!<%A%s$r;H$C$F2r<a$7$^$9$,!"$3$l$O!""0" $G;O$^$kDj?t$O8?J?t$H!"$^$?"0x" $+"0X" $G;O$^$kDj?t$O16?J?t$H$_$J$9$3$H$r0UL#$7$^$9!#

<B?t(IbF0>.?t) Dj?t$O!"C $Natof() %i%$%V%i%j%k!<%A%s$r;H$C$F2r<a$7$^$9!#

J#AG?t$NDj?t$O{<real>,<imag>} $HI=8=$7$^$9!#$3$3$G<real> $H<imag> (<BIt!"5uIt) $O?tCMDj?t$G$"$kI,MW$,$"$j$^$9!#Nc$($P{3,2} $O3 + 2i $r$"$i$o$7!"{0,1} $O'i' <+?H$rI=$7$^$9!#$3$l$i$K$OL@<(E*$KCf%+%C%3$r;H$&I,MW$,$"$j$^$9!#

J8;zNsDj?t$OC1 0 l 0 zMQId$+Fs=E0zMQId$N$$$:$l$+$G0O$^$l$?G$0U$NJ8;z$NJB$S$+$i$J$k$b$N$G$9!#C1 0 l 0 zMQId$HFs=E0zMQId$N0c$$$O=EMW$G$9!#0J2<;2>H:**quotes (p. 50)**!#

Nc:

```
1 -10 0xffaabb         # @0?tDj?t
1.0 -10. 1e1 3.5e-1    # <B?tDj?t
{1.2, -3.4}            # J#AG?tDj?t
"Line 1\nLine 2"       # J8;zNsDj?t (\n $O2~9T$KE83+$5$l$k)
'123\n456'             # J8;zNsDj?t (\ $H n $O$=$N$^$^$NJ8;z)
```

## 4X?t (Functions)

FC$KCm0U$,$J$1$l$P!"**gnuplot** $N?t3X4X?t$N0z?t$O@0?t!"<B?t!"J#AG?t$NCM$r<h$k$3$H$,$G$-$^$9!#3Q$r0z?t$dLa$jCM$H$9$k4X?t(Nc$($Psin(x)) $O!"$=$NCM$r%i%8%"%s$H$7$F07$$$^$9$,!"$3$l$O%3%^%s%I **set angles** $K$h$C$FEY$KJQ99$G$-$^$9!#

?t3X%i%$%V%i%j4X?t

| 4X?t | 0z?t | La$jCM |
|---|---|---|
| abs(x) | G$0U | $x$ $N@dBPCM, $\lvert x\rvert$; F1$87? |
| abs(x) | J#AG?t | $x$ $ND9$5, $\sqrt{\mathrm{real}(x)^2 + \mathrm{imag}(x)^2}$ |
| acos(x) | G$0U | $\cos^{-1} x$ (%"!<%/%3%5%$%s) |
| acosh(x) | G$0U | %i%8%"%s$G$N $\cosh^{-1} x$ (5UAP6JM>89) |
| airy(x) | G$0U | %(%"%j!<4X?t Ai(x) |
| arg(x) | J#AG?t | $x$ $NJP3Q |
| asin(x) | G$0U | $\sin^{-1} x$ (%"!<%/%5%$%s) |
| asinh(x) | G$0U | %i%8%"%s$G$N $\sinh^{-1} x$ (5UAP6J@589) |
| atan(x) | G$0U | $\tan^{-1} x$ (%"!<%/%?%s%8%'%s%H) |
| atan2(y,x) | @0?t$^$?$O<B?t | $\tan^{-1}(y/x)$ (%"!<%/%?%s%8%'%s%H) |
| atanh(x) | G$0U | %i%8%"%s$G$N $\tanh^{-1} x$ (5UAP6J@5@\) |
| EllipticK(k) | <B?t k ∈ (-1:1) | $K(k)$ Bh1<o40A4BJ1_@QJ, |
| EllipticE(k) | <B?t k ∈ [-1:1] | $E(k)$ Bh2<o40A4BJ1_@QJ, |
| EllipticPi(n,k) | <B?t n<1, <B?t k ∈ (-1:1) | $\Pi(n,k)$ Bh3<o40A4BJ1_@QJ, |
| besj0(x) | @0?t$^$?$O<B?t | $J_0$ %Y%C%;%k4X?t(0<!%Y%C%;%k4X?t) |
| besj1(x) | @0?t$^$?$O<B?t | $J_1$ %Y%C%;%k4X?t(1<!%Y%C%;%k4X?t) |

?t3X%i%$%V%i%j4X?t

| 4X?t | 0z?t | La$jCM |
|---|---|---|
| besy0(x) | @0?t$^$?$O<B?t | $Y_0$ %Y%C%;%k4X?t (0 <!%N%$%^%s4X?t) |
| besy1(x) | @0?t$^$?$O<B?t | $Y_1$ %Y%C%;%k4X?t (1 <!%N%$%^%s4X?t) |
| ceil(x) | G$0U | $\lceil x \rceil$, $x$ ($N<BIt) 0J>e$N:G>.$N@0?t |
| cos(x) | G$0U | $x$ $N%3%5%$%s $\cos x$ |
| cosh(x) | G$0U | $\cosh x$, $x$ $N%O%$%Q%\%j%C%/%3%5%$%s |
| erf(x) | G$0U | erf(real($x$)), $x$ $N<BIt$N8m:94X?t |
| erfc(x) | G$0U | erfc(real($x$)), 1.0 - ($x$ $N<BIt$N8m:94X?t) |
| exp(x) | G$0U | $e^x$, $x$ $N;X?t4X?t |
| expint(n,x) | @0?t $n \geq 0$, <B?t $x \geq 0$ | $E_n(x) = \int_1^\infty t^{-n} e^{-xt}\, dt$, $x$ $N;X?t@QJ, |
| floor(x) | G$0U | $\lfloor x \rfloor$, $x$ ($N<BIt) 0J2<$N:GBg$N@0?t |
| gamma(x) | G$0U | gamma(real($x$)), $x$ $N<BIt$N%,%s%^4X?t |
| ibeta(p,q,x) | G$0U | ibeta(real($p, q, x$)), $p$,$q$,$x$ $N<BIt$NIT40A4%Y!<%?4X?t |
| inverf(x) | G$0U | $x$ $N<BIt$N5U8m:94X?t |
| igamma(a,x) | G$0U | igamma(real($a, x$)), $a$,$x$ $N<BIt$NIT40A4%,%s%^4X?t |
| imag(x) | J#AG?t | $x$ $N5u?tItJ, (<B?t) |
| invnorm(x) | G$0U | $x$ $N<BIt$N5U@55,J,I[4X?t |
| int(x) | <B?t | $x$ $N@0?tItJ, (0 $K8~$+$C$F4]$a) |
| lambertw(x) | <B?t | Lambert W 4X?t |
| lgamma(x) | G$0U | lgamma(real($x$)), $x$ $N<BIt$N%,%s%^BP?t4X?t |
| log(x) | G$0U | $\log_e x$, $x$ $N<+A3BP?t (Dl $e$) |
| log10(x) | G$0U | $\log_{10} x$, $x$ $NBP?t (Dl 10) |
| norm(x) | G$0U | $x$ $N<BIt$N@55,J,I[(%,%&%9J,I[) 4X?t |
| rand(x) | @0?t | 6h4V [0:1] Fb$N5?;wMp?t@8@.4o |
| real(x) | G$0U | $x$ $N<BIt |
| sgn(x) | G$0U | $x > 0$ $J$i 1, $x < 0$ $J$i -1, $x = 0$ $J$i 0. $x$ $N5uIt$OL5;k |
| sin(x) | G$0U | $\sin x$, $x$ $N%5%$%s |
| sinh(x) | G$0U | $\sinh x$, $x$ $N%O%$%Q%\%j%C%/%5%$%s |
| sqrt(x) | G$0U | $\sqrt{x}$, $x$ $NJ?J}:, |
| tan(x) | G$0U | $\tan x$, $x$ $N%?%s%8%'%s%H |
| tanh(x) | G$0U | $\tanh x$, $x$ $N%O%$%Q%\%j%C%/%?%s%8%'%s%H |
| voigt(x,y) | <B?t | Voigt/Faddeeva 4X?t $\frac{y}{\pi} \int \frac{exp(-t^2)}{(x-t)^2+y^2} dt$<br>Cm0U: voigt$(x, y) = real($faddeeva$(x + iy))$ |

libcerf (MxMQ2DG=$J>l9g$N$_) $K$h$kFC<l4X?t

| 4X?t | 0z?t | La$jCM |
|---|---|---|
| cerf(z) | J#AG?t | J#AG8m:94X?t |
| cdawson(z) | J#AG?t | Dawson @QJ, $D(z) = \frac{\sqrt{\pi}}{2} e^{-z^2} erfi(z)$ $NJ#AG3HD% |
| faddeeva(z) | J#AG?t | :F%9%1!<%k2=J#AG8m:94X?t $w(z) = e^{-z^2}\ erfc(-iz)$ |
| erfi(x) | <B?t | 5u8m:94X?t $erf(x) = -i * erf(ix)$ |
| VP(x,$\sigma$,$\gamma$) | <B?t | Voigt %W%m%U%!%$%k $VP(x, \sigma, \gamma) = \int_{-\infty}^{\infty} G(x'; \sigma) L(x - x'; \gamma) dx'$ |

J8; zNs4X?t

| 4X?t | 0z?t | JV$ jCM |
|---|---|---|
| gprintf(”format”,x,...) | G$0U | gnuplot $N=q<02r@O4o$rE,MQ$7$?7k2L$NJ8; zNs |
| sprintf(”format”,x,...) | J#?t8D | C 8@8l$N sprintf $NJV$9J8; zNs |
| strlen(”string”) | J8; zNs | J8; zNsCf$NJ8; z?t |
| strstrt(”string”,”key”) | J8; zNs | ItJ,J8; zNs ”key” $,8=$l$k@hF,0LCV |
| substr(”string”,beg,end) | J#?t8D | J8; zNs ”string”[beg:end] |
| strftime(”timeformat”,t) | G$0U | gnuplot $K$h$k; ~9o2r@O7k2L$NJ8; zNs |
| strptime(”timeformat”,s) | J8; zNs | J8; zNs s $rJQ49$7$? 1970 G/$+$i$NIC?t |
| system(”command”) | J8; zNs | %7%'%k%3%^%s%I$N=PNO$r; }$DJ8; zNs |
| word(”string”,n) | J8; zNs, @0?t | J8; zNs ”string” $N n HVL\$NC18l |
| words(”string”) | J8; zNs | J8; zNs ”string” Cf$NC18l?t |

B>$N **gnuplot** $N4X?t

| 4X?t | 0z?t | JV$ jCM |
|---|---|---|
| column(x) | @0?t$+J8; zNs | %G!<%?%U%!%$%k=hM}Cf$N $x$ NsL\ |
| columnhead(x) | @0?t | %G!<%?%U%!%$%k$N:G=i$N $x$ NsL\Cf$NJ8; zNs |
| exists(”X”) | J8; zNs | JQ?tL> X $,Dj5A$5$l$F$$$l$P 1, $=$&$G$J$1$l$P 0 |
| hsv2rgb(h,s,v) | h,s,v ∈ [0:1] | 24 %S%C%H RGB ?'CM |
| stringcolumn(x) | @0?t$+J8; zNs | J8; zNs$H$7$F$N $x$ NsL\$NFbMF |
| timecolumn(N,”timeformat”) | @0?t, J8; zNs | %G!<%?F~NOCf$N $N$ NsL\$NF \|; ~%G!<%? |
| tm_hour(x) | @0?t | ; ~ |
| tm_mday(x) | @0?t | F \| |
| tm_min(x) | @0?t | J, |
| tm_mon(x) | @0?t | 7n |
| tm_sec(x) | @0?t | IC |
| tm_wday(x) | @0?t | $=$N=5$N2?F \|L\ |
| tm_yday(x) | @0?t | $=$NG/$N2?F \|L\ |
| tm_year(x) | @0?t | @>Nq |
| time(x) | G$0U | 8=:_$N%7%9%F%`; ~9o |
| valid(x) | @0?t | %G!<%?Cf$N column($x$) $N@5Ev@- |
| value(”name”) | J8; zNs | L>A0 name $NJQ?t$N8=:_$NCM |

### <o!9$NBJ1_@QJ, (elliptic integrals)

4X?t **EllipticK(k)** $O!"Bh 1 <o40A4BJ1_@QJ,!"$9$J$o$A!"4X?t **(1-(k*sin(p))**2)**(-0.5)** $N 0 $+$i&P/2 $^ $G$NHO0O$N9-5A@QJ,$NCM$rJV$7$^$9!#**k** $NDj5A0h$O -1 $+$i 1 $G$9 (N>C<$O4^$^$J$$)!#

4X?t **EllipticE(k)** $O!"Bh 2 <o40A4BJ1_@QJ,!"$9$J$o$A!"4X?t **(1-(k*sin(p))**2)**0.5** $N 0 $+$i&P/2 $^$G $NHO0O$N9-5A@QJ,$NCM$rJV$7$^$9!#**k** $NDj5A0h$O -1 $+$i 1 $G$9 (N>C<$b4^$`)!#

4X?t **EllipticPi(n,k)** $O!"Bh 3 <o40A4BJ1_@QJ,!"$9$J$o$A4X?t **(1-(k*sin(p))**2)**(-0.5)/(1-n*sin(p)**2)** $N 0 $+$i&P/2 $^$G$NHO0O$N9-5A@QJ,$NCM$rJV$7$^$9!#%Q%i%a!<%? **n** $O 1 $h$j>.$5$/!"**k** $O -1 $H 1 $N4V (N>C<$O4^$^$J$$) $G$J$1$l$P$$$1$^$;$s!#Dj5A$h$j!"$9$Y$F$N@5$N **k** $KBP$7 EllipticPi(0,k) == EllipticK(k) $G $"$k$3$H$KCm0U$7$F$/$@$5$$!#

### Mp?t$N@8@. (random)

4X?t **rand()** $O 0 $H 1 $N4V$N5?;wMp?tNs$r@8@.$7$^$9!#$3$l$O0J2<$+$i$N%"%k%4%j%:%`$r;HMQ$7$F$$$^$9: P. L’Ecuyer and S. Cote, "Implementing arandom number package with splitting facilities", ACM Transactions onMathematical Software, 17:98-111 (1991).

| | |
|---|---|
| `rand(0)` | FbIt$K; }$D 2 $D$N **32bit** $N<o **(seed)** $N8=:_$NCM$+$i@8 @.$5$l$k [0:1] 6h4VFb$N5?;wMp?tCM$rJV$9 |
| `rand(-1)` | 2 $D$N<o$NCM$rI8=`CM$KLa$9 |
| `rand(x)` | 0 < x < 2^31-1 $N@0?t$J$i<o$NN>J}$r x $K@_Dj$9$k |
| `rand({x,y})` | 0 < x,y < 2^31-1 $N@0?t$J$i **seed1** $r x $K **seed2** $r y $K@_Dj$9$k |

### Value

A $,%f!<%6!<Dj5AJQ?t$NL>A0$G$"$1$P!"B = value("A") $O;v<B>e B = A $HA4$/F1$8$G$9!#$3$1$O!"JQ?t$NL>A0<+?H$,J8;zNsJQ?t$K<}$a$i$1$F$$$k>19g$KM-MQ$G$9!#0J2<;2>H: **user-defined variables (p. 36)**!#$3$1$O!"JQ?tL>$r%G!<%?%U%!%$%k$+$iF I$_<h$k$3$H$b2DG=$K$7$^$9!#0z?t$,?t<0$G$"$k>19g!"value() $O$=$N?t<0$NCM$rJV$7$^$9!#0z?t$,J8;zNs$G!"Dj5A$5$1$F$$$kJQ?t$KBP1~$9$k$b$N$,$J$$>19g!"value() $O NaN $rJV$7$^$9!#

### C18l$N<h$ j=P$7$HC18l?t (word, words)

**word("string",n)** $O!"J8;zNs (string) $N n HVL\$NC18l$rJV$7$^$9!#Nc$($P **word("one two three",2)** $O J8;zNs "two" $rJV$7$^$9!#

**words("string")** $O!"J8;zNs (string) $NC18l?t$rJV$7$^$9!#Nc$($P!"**words(" a b c d")** $O 4 $rJV$7$^$9!#

4X?t **word** $H **words** $O!"C10l0zMQId!"Fs=E0zMQId$G0O$^$1$?J8;zNs$b!"8BDjE*$G$9$,%5%]!<%H$7$F$$$^$9:

```
print words("\"double quotes\" or 'single quotes'")   # 3
```

3+;O0zMQId$NA0$O!"%9%Z!<%9$+!"$^$?$OJ8;zNs$N@hF,$G$J$1$1$P$$$1$^$;$s!#$3$1$O!"C18lFb!"$"$k$$$OC18l=*$o$j$K$D$/%"%]%9%H%m%U%#!<(') $O!"$=$1$>$1$NC18l$NMWAG$G$"$k$H8+$J$5$1$k$3$H$r0UL#$7$^$9:

```
print words("Alexis' phone doesn't work") # 4
```

0zMQIdJ8;z$N% (%9%1!<%W$O%5%]!<%H$7$F$$$^$;$s$N$G!"$"$k0zMQId$r0];}$7$?$$>19g$O!"$=$1$>$1$rJL$N<oN`$N0zMQId$G0O$^$J$1$1$P$$$1$^$;$s:

```
s = "Keep \"'single quotes'\" or '\"double quotes\"'"
print word(s, 2) # 'single quotes'
print word(s, 4) # "double quotes"
```

:G8e$NNc$G$O!"0zMQId$N% (%9%1!<%W$,J8;zNs$NDj5A;~$N$_$KI,MW$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

## 1i;;;R (Operators)

**gnuplot** $N1i;;;R$O!"C 8@8l$N1i;;;R$H$[$\F1$8$G$9$,!"FC$KCm0U$,$J$1$1$PA4$F$N1i;;;R$,@0?t!"<B?t!"J#AG?t$N0z?t$r<h$k$3$H$,$G$-$^$9!#$^$?!"FORTRAN $G;H$($k ** (N_>h) 1i;;;R$b%5%]!<%H$5$1$F$$$^$9!#

1i;;$NI>2A$N=g=x$rJQ9 9$9$k$K$O$+$C$3$r;H$$$^$9!#

### C19`1i;;;R (Unary)

0J2<$O!"C19`1i;;;R$H$=$N;HMQK!$N0lMw$G$9:

| C19`1i;;;R | | |
|---|---|---|
| 5-9f | Nc | @bL@ |
| - | -a | %^%$%J%9Id9f |
| + | +a | %W%i%9Id9f (2?$b$7$J$$) |
| ~ | ~a | * 1 $NJd?t (%S%C%HH?E>) |
| ! | !a | * O@M}E*H]Dj |
| ! | a! | * 3,>h |
| $ | $3 | * 'using' Fb$G$N0z?t/Ns;XDj |
| \| | \|A\| | G[Ns A $NMWAG?t |

@bL@$K@10u (*) $N$D$$$?1i;;;R$N0z?t$O@0?t$G$J$1$1$P$J$j$^$;$s!#

1i;;;R$NM%@h=g0L$O Fortran $d C $HF1$8$G$9!#$=$1$i$N8@8lF1MM!"1i;;$NI>2A$5$1$k=g=x$rJQ$($k$?$a$K$+$C$3$,;H$o$1$^$9!#$h$C$F -2**2 = -4 $G!"(-2)**2 = 4 $G$9!#

3,>h1i;;;R$O!"Bg$-$JCM$rJV$;$k$h$&$K<B?t$rJV$7$^$9!#

### Fs9‘1i;;;R (Binary)

0J2<$O!"Fs9‘1i;;;R$H$=$N;HMQK!$N0lMw$G$9:

| Fs9‘1i;;;R | | |
|---|---|---|
| 5-9f | Nc | @bL@ |
| ** | a**b | N_>h |
| * | a*b | @Q |
| / | a/b | >& |
| % | a%b | * M>$j |
| + | a+b | OB |
| - | a-b | :9 |
| == | a==b | Ey$7$$ |
| != | a!=b | Ey$7$/$J$$ |
| < | a<b | $h$j>.$5$$ |
| <= | a<=b | 0J2< |
| > | a>b | $h$jBg$-$$ |
| >= | a>=b | 0J>e |
| << | 0xff<<1 | Id9f$J$7:8%7%U%H |
| >> | 0xff>>1 | Id9f$J$71&%7%U%H |
| & | a&b | * %S%C%H@Q (AND) |
| ^ | a^b | * %S%C%HGSB>E*O@M}OB (XOR) |
| \| | a\|b | * %S%C%HOB (OR) |
| && | a&&b | * O@M}E* AND |
| \|\| | a\|\|b | * O@M}E* OR |
| = | a = b | BeF~ |
| , | (a,b) | N_<!I>2A |
| . | A.B | J8;zNs$NO"7k |
| eq | A eq B | J8;zNs$,Ey$7$$ |
| ne | A ne B | J8;zNs$,Ey$7$/$J$$ |

@bL@$K@10u (*) $N$D$$$?1i;;;R$N0z?t$O@0?t$G$J$1$l$P$J$j$^$;$s!#BgJ8;z$N A,B $O1i;;;R$,J8;zNs0z?t$rMW5a$9$k$3$H$r0UL#$7$^$9!#

O@M}1i;;;R$N AND (&&) $H OR (||) $O C 8@8lF1MM$KI,MW:G>.8B$NI>2A$7$+$7$^$;$s!#$9$J$o$A!"&& $NBh 2 0z?t$O!"Bh 1 0z?t$,56$J$i$PI>2A$5$l$^$;$s$7!"|| $NBh 2 0z?t$O!"Bh 1 0z?t$,??$J$i$PI>2A$5$l$^$;$s!#

N_<!I>2A (,) $O!"%+%C%3$NCf$G$N$_I>2A$5$l!":8$+$i1&$X=g$K<B9T$9$k$3$H$,J]>Z$5$l!":G$b1&$N<0$NCM$,JV$5$l$^$9!#

### ;09‘1i;;;R (Ternary)

01$D$@$1;09‘1i;;;R$,$"$j$^$9:

| ;09‘1i;;;R | | |
|---|---|---|
| 5-9f | Nc | @bL@ |
| ?: | a?b:c | ;09‘1i;;;R |

;09‘1i;;;R$O C $N$b$N$HF1$8F/$-$r$7$^$9!#:G=i$N0z?t (a) $O@0?t$G$J$1$l$P$$$1$^$;$s!#$3$NCM$,I>2A$5$l!"$=$l$,??(%<%m$G$J$$) $J$i$P 2 HVL\$N0z?t (b) $,I>2A$5$l$=$NCM$,JV$5$l!"$=$&$G$J$1$l$P 3 HVL\$N0z?t (c) $,I>2A$5$l!"$=$NCM$,JV$5$l$^$9!#

;09‘1i;;;R$O!"6hJ,E*$KDj5A$5$l$?4X?t$d!"$"$k>r7o$,K~$?$5$l$?>l9g$K$N$_E@$rIA2h$9$k!"$H$$$C$?$3$H$r9T$J$&>l9g$KM-MQ$G$9!#

Nc:

0 <= x < 1 $G$O sin(x) $K!"1 <= x < 2 $G$O 1/x $KEy$7$/$F!"$=$l0J30$Nx $G$ODj5A$5$l$J$$4X?t$rIA2h:

```
     f(x) = 0<=x && x<1 ? sin(x) : 1<=x && x<2 ? 1/x : 1/0
     plot f(x)
```

**gnuplot** $OL$Dj5ACM$KBP$7$F$O2?$bI=< ($;$:$K$?$@L5;k$9$k$N$G!":G8e$N>19g$N4X?t (1/0) $OE@$r2?$b=PNO$7$J$$$3$H$KCm0U$7$F$/$@$5$$!#$^$?!"$3$N4X?tIA2h$NIA2h%9%?%$%k$, lines (@~IA2h) $N>19g!"ITO"B3E@ (x=1) $N=j$bO"B34X?t$H$7$F@~$,7k$P$l$F$7$^$&$3$H$K$bCm0U$7$F$/$@$5$$!#$=$NE@$rITO"B3$K$J$k$h$&$K$9$k$K$O!"4X?t$r2 $D$NItJ,$=$l$>$l$KJ,$1$F$/$@$5$$ ($3$N$h$&$J>19g!"G^2pJQ?t4X?t$r;H$&$N$,JXMx$G$9)!#

%U%!%$%k 'file' $N%G!<%?$G!"4 NsL\$N%G!<%?$,Ii$G$J$$$H$-$@$1!"1 NsL\$N%G!<%?$K4X$9$k2 NsL\$H3 NsL\$N%G!<%?$NJ?6QCM$rIA2h:

```
plot 'file' using 1:( $4<0 ? 1/0 : ($2+$3)/2 )
```

**using** $N=q<0$N@bL@$K4X$7$F$O!"0J2<;2>H: **plot datafile using (p. 98)**!#

## OB (Summation)

OB$N<0$O!"0J2<$N7A<0$GI=$7$^$9:

```
sum [<var> = <start> : <end>] <expression>
```

$3$3$G <var> $O!"<start> $+$i <end> $^$G$N@0?tCM$r=g$K<h$k@0?tJQ?t$H$7$F0 7$o$l$^$9!#$=$N3FCM$KBP$7$F!"<0 <expression> $NCM$,9g7WCM$KDI2C$5$l!":G=*E*$J9g7WCM$,$3$NOB$N<0$NCM$H$J$j$^$9!#Nc:

```
print sum [i=1:10] i
    55.
# 0J2<$O plot 'data' using 1:($2+$3+$4+$5+$6+...) $HF1Ey
plot 'data' using 1 : (sum [col=2:MAXCOL] column(col))
```

<expression> $O!"I,$:$7$bJQ?t <var> $r4^$`I,MW$O$"$j$^$;$s!#<start> $H <end> $OJQ?tCM$d?t<0$G;XDj$b$G$-$^$9$,!"$=$l$i$NCM$OF0E*$KJQ99$9$k$3$H$O$G$-$^$;$s!#$=$&$G$J$$$HI{:nMQ$,5/$3$jF@$^$9!#<end> $, <start> $h$j>.$5$$>19g$O!"OB$NCM$O 0 $H$J$j$^$9!#

## Dj5A:Q$_JQ?t (Gnuplot-defined variables)

gnuplot $O!"%W%m%0%i%`$N8=:_$NFbIt>uBV$HD>A0$NIA2h$rH?1G$9$k$h$&$JFI$_=P$7@lMQ$NJQ?t$r$$$/$D$+;}$C$F$$$^$9!#$3$l$i$NJQ?t$NL>A0$O!"Nc$($P GPVAL_TERM, GPVAL_X_MIN, GPVAL_X_MAX, GPVAL_Y_MIN $N$h$&$K "GPVAL_" $G;O$^$j$^$9!#$3$l$i$9$Y$F$N0lMw$H$=$NCM$r8+$k$K$O!"**show variables all** $HF~NO$7$F$/$@$5$$!#$?$@$7!"<4$N%Q%i%a!<%?$K4XO"$9$kCM (HO0O!"BP?t<4$G$"$k$+Ey) $O!"8=:_**set** $7$?$b$N$G$O$J$/!":G8e$KIA2h$5$l$?$b$N$,;HMQ$5$l$^$9!#

Nc: E@ [X,Y] $N%9%/%j!<%sHf$G$N:BI8$r7W;;$9$kJ}K!

```
GRAPH_X = (X - GPVAL_X_MIN) / (GPVAL_X_MAX - GPVAL_X_MIN)
GRAPH_Y = (Y - GPVAL_Y_MIN) / (GPVAL_Y_MAX - GPVAL_Y_MIN)
SCREEN_X = GPVAL_TERM_XMIN + GRAPH_X * (GPVAL_TERM_XMAX - GPVAL_TERM_XMIN)
SCREEN_Y = GPVAL_TERM_YMIN + GRAPH_Y * (GPVAL_TERM_YMAX - GPVAL_TERM_YMIN)
FRAC_X = SCREEN_X * GPVAL_TERM_SCALE / GPVAL_TERM_XSIZE
FRAC_Y = SCREEN_Y * GPVAL_TERM_SCALE / GPVAL_TERM_YSIZE
```

FI$_=P$7@lMQJQ?t GPVAL_ERRNO $O!"G$0U$N gnuplot %3%^%s%I$,$"$k%(%i!<$N$?$a$KAa$/=*$o$C$F$7$^$C$?>19g$K 0 $G$J$$$CM$K%;%C%H$5$l!"D>A0$N%(%i!<%a%C%;!<%8$OJ8;zNsJQ?t GPVAL_ERRMSG $KJ]B8$5$l$^$9!#GPVAL_ERRNO $H GPVAL_ERRMSG $O!"%3%^%s%I **reset errors** $r;H$C$F%/%j%"$G$-$^$9!#

**mouse** 5!G=$,;H$($kBPOC7?F~=PNO7A<0$O!""MOUSE_" $G;O$^$kFI$_=P$7@lMQJQ?t$r$$$/$D$+;}$C$F$$$^$9!#>\:Y$O!"0J2<;2>H: **mouse variables (p. 46)**!#

**fit** 5!G=$O!""FIT_" $G;O$^$k$$$/$D$+$NJQ?t$r;HMQ$7$^$9$N$G!"$=$N$h$&$JL>A0$r;H$&$N$OHr$1$k$Y$-$G$7$g$&!#**set fit errorvariables** $r;HMQ$9$k$H!"3FEv$F$O$aJQ?t$N%(%i!<$O!"$=$N%Q%i%a!<%?L>$K "_err" $rDI2C$7$?JQ?t$KJ]B8$5$l$^$9!#>\:Y$O!"0J2<;2>H: **fit (p. 75)**!#

0J2<$b;2>H: **user-defined variables (p. 36)**, **reset errors (p. 111)**,**mouse variables (p. 46)**, **fit (p. 75)**!#

## %f!<%6Dj5A$NJQ?t$H4X?t (User-defined)

?7$?$J%f!<%6Dj5AJQ?t$H1 8D$+$i 12 8D$^$G$N0z?t$r;}$D%f!<%6Dj5A4X?t$r!"G$0U$N>l=j$GDj5A$7$?$j;H$C$?$j$9$k$3$H$,$G$-$^$9!#$=$1$O plot %3%^%s%I>e$G$b2DG=$G$9!#

%f!<%6Dj5A4X?t=q<0:

```
<func-name>( <dummy1> {,<dummy2>} ... {,<dummy12>} ) = <expression>
```

$3$3$G <expression> $O2>JQ?t <dummy1> $+$i <dummy12> $GI=$5$1$k?t<0$G$9!#

%f!<%6Dj5AJQ?t=q<0:

```
<variable-name> = <constant-expression>
```

Nc:

```
w = 2
q = floor(tan(pi/2 - 0.1))
f(x) = sin(w*x)
sinc(x) = sin(pi*x)/(pi*x)
delta(t) = (t == 0)
ramp(t) = (t > 0) ? t : 0
min(a,b) = (a < b) ? a : b
comb(n,k) = n!/(k!*(n-k)!)
len3d(x,y,z) = sqrt(x*x+y*y+z*z)
plot f(x) = sin(x*a), a = 0.2, f(x), a = 0.4, f(x)

file = "mydata.inp"
file(n) = sprintf("run_%d.dat",n)
```

:G8e$N2 9T$NNc$O!"%f!<%6Dj5AJ8;zNsJQ?t$H!"%f!<%6Dj5AJ8;zNs4X?t$r0UL#$7$F$$$^$9!#

JQ?t **pi** (3.14159...) $H **NaN** (IEEE Hs?t ("Not a Number")) $O$"$i$+$8$aDj5A$5$1$F$$$^$9!#$3$1$i$,I,MW$J$1$1$P!"B>$N$b$N$K:FDj5A$9$k$3$H$b2DG=$G$9$7!"0J2<$N$h$&$K$7$F8 5$NCM$KI|5"$9$k$3$H$b$G$-$^$9:

```
NaN = GPVAL_NaN
pi  = GPVAL_pi
```

B>$K$b$$/$D$+$NJQ?t$,!"Nc$($PBPOC7?F~=PNO7A<0$G$N%^%&%9A`:n$dEv$F$O$a (fit) $J$I$N gnuplot $NF0:n>uBV$K1~$8$FDj5A$5$1$^$9!#>\:Y$O0J2<;2>H: **gnuplot-defined variables (p. 35)**!#

$"$kJQ?t V $,4{$KDj5A$5$1$F$$$k$+$I$&$+$O!"<0 exists("V") $G%A%'%C%/$G$-$^$9!#Nc:

```
a = 10
if (exists("a")) print "a is defined"
if (!exists("b")) print "b is not defined"
```

JQ?tL>$d4X?tL>$NL?L>5,B'$O!"BgDq$N%W%m%0%i%_%s%08@8l$HF1$8$G!"@hF,$O%"%k%U%!%Y%C%H$G!"$=$N8e$NJ8;z$O%"%k%U%!%Y%C%H!"?t;z!""_" $,;H$($^$9!#

3F4X?t$NDj5A<0$O!"'GPFUN_' $H$$$&@\F,<-$r;}$DFCJL$JJ8;zNsCMJQ?t$H$7$FMxMQ$G$-$^$9!#

Nc:

```
set label GPFUN_sinc at graph .05,.95
```

0J2<;2>H: **show functions (p. 134)**, **functions (p. 102)**, **gnuplot-defined variables (p. 35)**,**macros (p. 48)**, **value (p. 33)**!#

## G[Ns (Arrays)

G[Ns$O!"%f!<%6JQ?t$NE:;zIU$-%j%9%H$H$7$F<BAu$5$1$F$$$^$9!#0l$D$NG[Ns$NMWAG$O!"0l$D$NJQ?t7?$K$O8BDj$5$1$F$$$^$;$s!#G[Ns$O!";2>H$9$kA0$KL@<(E*$K:n$i$1$F$$$J$1$1$P$$$1$^$;$s!#G[Ns$r:n@.$7$?8e$G!"$=$N%5%$%:$rJQ99$9$9$k$3$H$O$G$-$^$;$s!#$9$Y$F$NMWAG$O!":G=i$OL$Dj5A (undefined) $G$9!#$[$H$s$I$N>lLL$G!"L>A0IU$-%f!<%6JQ?t$NBe$o$j$KG[NsMWAG$rMxMQ$G$-$^$9!#G[Ns A $NMWAG?t$O!"?t<0 |A| $G<hF@$G$-$^$9!#

Nc:

```
array A[6]
A[1] = 1
A[2] = 2.0
A[3] = {3.0, 3.0}
A[4] = "four"
A[6] = A[2]**3
array B[6] = [ 1, 2.0, A[3], "four", , B[2]**3 ]

do for [i=1:6] { print A[i], B[i] }
    1 1
    2.0 2.0
    {3.0, 3.0} {3.0, 3.0}
    four four
    <undefined> <undefined>
    8.0 8.0
```

Cm0U: G[Ns$HJQ?t$O!"F1$8L>A06u4V$r6&M-$7$^$9!#Nc$($P!"$"$i$+$8$a FOO $H$$$&L>A0$NG[Ns$,$"$k>l9g!" FOO $H$$$&L>A0$NJ8;zNsJQ?t$r;H$&$H!"G[Ns$rGK2u$7$^$9!#

G[Ns$NL>A0$r **plot**, **splot**, **fit**, **stats** %3%^%s%I$KM?$($k$3$H$b$G$-$^$9!#$=$N>l9g!"G[Ns$NE:;z$,%U%!%$%k$N 1 NsL\$NCM$G (1 $+$i size $^$G) !"$=$NCM A[i] $,%U%!%$%k$N 2 NsL\$G$"$k$h$&$J%G!<%?%U%!%$%k$rM?$($?$3$H $HF1Ey$K$J$j$^$9!#

Nc:

```
array A[200]
do for [i=1:200] { A[i] = sin(i * pi/100.) }
plot A title "sin(x) in centiradians"
```

$?$@$7!"plot ;~$KJ#AG?tCMG[Ns$N5u?tItJ,$r;HMQ$9$k>l9g$O!"$=$NCM$O $2 $G$O$J$/!"A[$1] $H$7$F;2>H$9$k I,MW$,$"$j$^$9!#Nc:

```
plot A using (F1(real(A[$1])) : (F2(imag(A[$1]))
```

### %U%)%s%H

gnuplot $=$l<+?H$K$O$I$s$J%U%)%s%H$b4^$^$l$F$O$*$i$:!"3OIt%U%)%s%H=hM}$KMj$C$F$$$k$@$1$G!"$=$N:YIt $OHa$7$$$3$H$K=PNO7A<0Kh$K0[$J$j$^$9!#$3$3$G$O!"J#?t$N=PNO7A<0$KE,MQ$5$l$k%U%)%s%H5!9=$K$D$$$F@bL@ $7$^$9!#$3$3$K>e$2$?$b$N0J30$N=PNO7A<0$G$N%U%)%s%H$N;HMQ$K4X$7$F$O!"$=$N=PNO7A<0$N%I%-%e%a%s%H$r;2 >H$7$F$/$@$5$$!#

0l;~E*$K!"Nc$($P Adobe Symbol %U%)%s%H$N$h$&$JFCJL$J%U%)%s%H$K@Z$jBX$($k$3$H$G%"%k%U%!%Y%C%H$G$O$J $$5-9f$rF~$l$k$3$H$b2DG=$G$9$,!"8=:_$O!"UTF-8 %(%s%3!<%G%#%s%0$r;HMQ$7$F!"I,MW$J5-9f$r;X$9 Unicode %(%s%H%j$r;XDj$9$k$H$$$&J}K!$,$"$j$^$9!#0J2<;2>H: **encoding (p. 128)**, **locale (p. 145)**!#

### Cairo (pdfcairo, pngcairo, epscairo, wxt =PNO7A<0)

$3$l$i$N=PNO7A<0$O!"%U%)%s%H$N8!:w$H%"%/%;%9$K30It$N fontconfig %D!<%k72$r;HMQ$7$^$9!# fontconfig %f!<%6%^%K%e%"%k

$r;2>H$7$F$/$@$5$$!#$3$l$O!"gnuplot $G0lHIE*$JL>A0$d%5%$%:$G%U%)%s%H$rMW5a$9$k$3$H$r2DG=$K$7!"I,MW $J$i$P fontconfig $KF1Ey$N%U%)%s%H$rBeMQ$5$;$k$3$H$b$G$-$k$N$G!"DL>o$O$3$l$G==J,$G$7$g$&!#0J2<$O!"B? J,$$$:$l$b5!G=$7$^$9:

```
set term pdfcairo font "sans,12"
set term pdfcairo font "Times,12"
set term pdfcairo font "Times-New-Roman,12"
```

## Gd (png, gif, jpeg, sixel terminals)

png, gif, jpeg, sixelgd =PNO7A<0$N%U%)%s%H=hM}$O!"30It%i%$%V%i%j libgd $K$h$C$F9T$o$l$^$9!#libgd $O!"<!$N5 <oN`$N4pK\%U%)%s%H$rD>@\Ds6!$7$F$$$^$9: **tiny** (5x8 %T%/%;%k), **small** (6x12 %T%/%;%k), **medium**, (7x13 Bold), **large** (8x16), **giant** (9x15 %T%/%;%k)!#$3$l$i$N%U%)%s%H$OBg$-$5$rJQ99$7$?$j2sE>$7$?$j$9$k$3$H$O$G$-$^$;$s!#;HMQ$9$k:]$O!"**font** %-!<%o!<%I$NBe$o$j$K>e$N%-!<%o!<%I$r;XDj$7$^$9!#Nc:

```
set term png tiny
```

B?$/$N%7%9%F%`$G!"libgd $O Adobe Type 1 %U%)%s%H (*.pfa) $H TrueType %U%)%s%H$X$N%"%/%;%9$bDs6!$7$^$9!#$=$N>l9g%U%)%s%H<+?H$NL>A0$G$O$J$/!"%U%)%s%H%U%!%$%k$NL>A0$r!""<face> {,<pointsize>}" $N7A<0$GM?$($^$9!#$3$3$G!"<face> $O%U%)%s%H%U%!%$%k$N%U%k%Q%9L>$+!"$^$?$O4D6-JQ?t GDFONTPATH $G;X<($5$l$k%G%#%l%/%H%j$N0l$D$NCf$N%U%!%$%kL>$N@hF,ItJ,!"$N$$:$l$+$G$9!#$h$C$F!"'set term png font "Face"' $O!"< $"$k%G%#%l%/%H%j>/Face.ttf $+ < $"$k%G%#%l%/%H%j>/Face.pfa $H$$$&%U%!%$%kL>$N%U%)%s%H$rC5$=$&$H$7$^$9!#Nc$($P!"GDFONTPATH $K **/usr/local/fonts/ttf:/usr/local/fonts/pfa** $,4^$^$l$F$$$k>l9g$O!"0J2<$N%3%^%s%I$N 2 $D$:$D$O$$$:$l$bF1$8$3$H$K$J$j$^$9:

```
set term png font "arial"
set term png font "/usr/local/fonts/ttf/arial.ttf"
set term png font "Helvetica"
set term png font "/usr/local/fonts/pfa/Helvetica.pfa"
```

%G%U%)%k%H$N%U%)%s%H%5%$%:$bF1;~$K;XDj$9$k$K$O:

```
set term png font "arial,11"
```

TrueType $H Adobe Type 1 %U%)%s%H$O!"40A4$KBg$-$5$NJQ99$d2sE>$,2DG=$G$9!#"set term" %3%^%s%I$G%U%)%s%H$r;XDj$7$J$+$C$?>l9g!"gnuplot $OJL$N%G%U%)%k%H%U%)%s%H$N@_Dj$,$"$k$+$I$&$+$rD4$Y$k$?$a$K4D6-JQ?t GNUPLOT_DEFAULT_GDFONT $r;2>H$7$^$9!#

## Postscript (%+%W%;%k2= **postscript *.eps** $b)

PostScript %U%)%s%H=hM}$O!"%W%j%s%?$+I=<(%=%U%H$,9T$$$^$9!#$b$7!"$"$J$?$N%3%s%T%e!<%?$K%U%)%s%H$,0l@Z$J$/$F$b!"gnuplot $O@5$7$$ PostScript %U%!%$%k!"$^$?$O%+%W%;%k2=PostScript (*.eps) %U%!%$%k$r@8@.$G$-$^$9!#gnuplot $OC1$K=PNO%U%!%$%kCf$K%U%)%s%H$rL>A0$H$7$FF~$l$k$@$1$G!"%W%j%s%?$dI=<(%=%U%H$,$=$NL>A0$+$i%U%)%s%H$r8+$D$1$k$+6a;w$9$k$3$H$r2>Dj$7$F$$$^$9!#

PostScript %W%j%s%?$dI=<(%=%U%H$O$9$Y$F!"I8=`E*$J Adobe %U%)%s%H%;%C%H **Times-Roman**, **Helvetica**, **Courier**, **Symbol** $OCN$C$F$$$k$O$:$G$9!#B?J,$=$NB>$K$bB?$/$N%U%)%s%H$,;H$($k$h$&$K$J$C$F$$$k$H;W$$$^$9$,!"$=$l$iFCDj$N%U%)%s%H%;%C%H$O$"$J$?$N%7%9%F%`$d%W%j%s%?$N@_Dj$K0MB8$7$^$9!#gnuplot $O!"$=$l$OCN$j$^$;$s$7$5$$K$b$7$^$;$s!#gnuplot $,:n@.$7$? *.ps $d *.eps =PNO$O!"$"$J$?$NMW5a$7$?%U%)%s%HL>$rC1$K;}$C$F$$$k$@$1$G$9!#

$h$C$F!"

```
set term postscript eps font "Times-Roman,12"
```

$O!"$9$Y$F$N%W%j%s%?$dI=<(%=%U%H$KE,@Z$J=PNO$r:n@.$7$^$9!#

0lJ}!"

```
set term postscript eps font "Garamond-Premier-Pro-Italic"
```

$O!"@5$7$$ PostScript $r4^$`=PNO%U%!%$%k$r:n@.$7$^$9$,!"$=$l$OFC<l$J%U%)%s%H$r;2>H$7$^$9$N$G!"0lIt$N%W%j%s%?$dI=<(%=%U%H$7$+!"MW5a$7$?$=$NFCDj$N%U%)%s%H$OI=<($G$-$J$$$G$7$g$&!#BgDq$N>l9g$OJL$J%U%)%s%H$GBeMQ$5$l$^$9!#

$7$+$7!";XDj$7$?%U%)%s%H$r=PNO%U%!%$%kCf$KKd$a9~$s$G!"$I$s$J%W%j%s%?$G$b$=$l$r;H$&$h$&$K$9$k$3$H$b2DG=$G$9!#$3$l$K$O!"$"$J$?$N%7%9%F%`$KE,@Z$J%U%)%s%H5-=R%U%!%$%k$,$"$k$3$H$,I,MW$H$J$j$^$9!#$3$NJ}K!$G%U%)%s%H$rKd$a9~$`>l9g!"FCDj$N%i%$%;%s%9$,I,MW$H$J$k%U%)%s%H%U%!%$%k$b$"$k$3$H$KCm0U$7$F$/$@$5$$!#$h$j>\:Y$J@bL@$dNc$K$D$$$F$O!"0J2<;2>H:**postscript fontfile (p. 243)**!#

## %X%k%W$NMQ8l2r@b (Glossary)

$3$N%I%-%e%a%s%HA4BN$KEO$C$F!"MQ8l$K4X$9$k0l4S@-$N0];}$,9M$($i$l$F$$$^$9!#$7$+$7$3$N;n$_$O40A4$K$O@.8y$7$F$$$^$;$s!#$=$l$O **gnuplot** $,;~4V$r$+$1$F?J2=$7$F$-$?$h$&$K!"%3%^%s%I$d%-!<%o!<%I$NL>A0$b$=$N$h$&$J40A4@-$rGS=|$9$k$+$N$h$&$K:NMQ$5$l$FMh$F$$$k$+$i$G$9!#$3$N%;%/%7%g%s$G$O!"$3$l$i$N%-!<%o!<%I$N$$$/$D$+$,$I$N$h$&$K;H$o$l$F$$$k$+$r@bL@$7$^$9!#

"%Z!<%8 (page)"!""I=<(2hLL (screen)"!""%-%c%s%P%9 (canvas)" $O!"**gnuplot** $,%"%/%;%92DG=$JNN0hA4BN$r;X$7$^$9!#%G%9%/%H%C%W$G$O$=$l$O%&%#%s%I%&A4BN$r;X$7!"%W%m%C%?$G$O!"0lKg$N;fA4BN!"svga %b!<%I$G$O!"%b%K%?%9%/%j!<%sA4BN$r;X$7$^$9!#

I=<(2hLL$O!"0l$D!"$^$?$O$=$l0J>e$N"%0%i%UIA2h (plot)" $r4^$_$^$9!#%0%i%UIA2h$O0l$D$N2#:BI8$H0l$D$N=D:BI8$GDj5A$5$l$^$9$,!"M>Gr (margin) $d$=$NCf$K=q$+$l$kJ8;zNs (text) F1MM!"$=$l$i$O<B:]$K$=$N>e$KI=<($5$l$F$$$kI,MW$O$"$j$^$;$s!#

%0%i%UIA2h$O0l$D$N"%0%i%U" $r4^$_$^$9!#%0%i%U$O0l$D$N2#:BI8$H0l$D$N=D:BI8$GDj5A$5$l$^$9$,!"$3$l$i$O<B:]$K$=$N>e$KI=<($5$l$F$$$kI,MW$O$"$j$^$;$s!#

%0%i%U$O0l$D$^$?$O$=$l0J>e$N"6J@~ (line)" $r4^$_$^$9!#6J@~$O0l$D$N4X?t!"$^$?$O%G!<%?=89g$G$9!#MQ8l "line" $OIA2h%9%?%$%k$H$7$F$b;H$o$l$^$9!#$5$i$K$3$NMQ8l$O "J8;zNs$N0l9T (a line of text)" $N$h$&$K;H$o$l$k$3$H$b$"$j$^$9!#B?J,J8L.$+$i$=$l$i$O6hJL$G$-$k$G$7$g$&!#

0l$D$N%0%i%U>e$NJ#?t$N6J@~$O$=$l$>$lL>A0$r;}$A$^$9!#$=$NL>A0$O!"$=$N6J@~$NI=8=$K;H$o$l$kIA2h%9%?%$%k$N%5%s%W%k$H$H$b$K"K^Nc (key)" Fb$K0lMwI=<($5$l$^$9!#K^Nc$O!";~$K$O "I=Bj (legend)" $H$b8F$P$l$^$9!#

MQ8l "%?%$%H%k (title)" $O **gnuplot** $G$OJ#?t$N0UL#$G;H$o$l$^$9!#$3$N%I%-%e%a%s%H$G$O$=$l$i$r6hJL$9$k$?$a$K!"7AMF;l$H$7$F "IA2h$N (plot)"!""6J@~$N (line)"!""K^Nc$N (key)" $rF,$K$D$1$?$j$b$7$^$9!#2<!85$N%0%i%U$O 4 $D$^$G$N8+=P$7IU$1$5$l$k<4$r;}$D$3$H$,$G$-$^$9!#$3$l$i 4 $D$N<4$NL>A0$O$=$l$>$l!"%0%i%UIA2h$N2<$N6-3&$K1h$&<4$G$"$k "x"!":8$N6-3&$K1h$&<4 "y"!">e$N6-3&$K1h$&<4 "x2"!"1&$N6-3&$K1h$&<4 "y2" $H$J$C$F$$$^$9!#0J2<;2>H: **axes (p. 87)**!#

3<!85$N%0%i%U$O 3 $D$^$G$N8+=P$7IU$1$5$l$k<4 (**axes**) "x","y","z" $r;}$D$3$H$,$G$-$^$9!#$I$NFCDj$N<4$K4X$7$F$b$=$l$,%0%i%U>e$G$I$3$K=q$+$l$k$+$r=R$Y$k$3$H$O$G$-$^$;$s!#$=$l$O!"**set view** $G%0%i%U$r8+$kJ}8~$rJQ99$G$-$k$+$i$G$9!#

%G!<%?%U%!%$%k$K4X$9$k5DO@$G$O!"MQ8l "9T (record)" $rI|3h$7!"%U%!%$%k$N0l9T$NJ8;zNs!"$9$J$o$A!"2~9TJ8;z$d9TKvJ8;zF1;N$N4V$NJ8;zNs!"$r;X$7<($9$N$K;H$$$^$9!#"E@ (point)" $O9T$+$i<h$j=P$7$?0l$D$N%G!<%?$G$9!#%G!<%?$N "%V%m%C%/ (block)" $O!"6u9T$G6h@Z$i$l$?O"B3$7$?J#?t$N9T$+$i$J$k=89g$G$9!#%G!<%?%U%!%$%k$N5DO@$NCf$G "line" $,;2>H$5$l$k>l9g$O!"$3$l$O%V%m%C%/$NItJ,=89g$r;X$7$^$9!#"%G!<%?$N%V%m%C%/ (data block)" $H$$$&8@MU$O!"%$%s%i%$%s%G!<%?$NL>A0IU$-%V%m%C%/$r;X$9$N$K$b;H$o$l$F$$$^$9!#0J2<;2>H: **datablocks (p. 39)**!#

(LuCm: $3$NF|K\8lLu$NCf$G$O$3$3$K=q$+$l$F$$$k$h$&$JMQ8l$NE}0l$O9MN8$5$l$F$O$*$i$:!"$h$C$F:.Mp$r0z$-5/$3$92DG=@-$,$"$j$^$9!#87L)$K$O86J8$r;2>H$9$Y$-$G$7$g$&!#)

## %$%s%i%$%s%G!<%?$H%G!<%?%V%m%C%/ (inline data and datablocks)

gnuplot $N%3%^%s%IF~NO$NCf$K%G!<%?$rKd$a9~$`;EAH$_$O2<dN'MQ0U$5$l$F$$$^$9!#$^$:!"FC<l%U%!%$%kL> '-' $, plot %3%^%s%ICf$KM?$($k$H!"$=$Nplot %3%^%s%I0J2<$KB3$/9T$,%$%s%i%$%s%G!<%?$H2r<a$5$l$^$9!#0J2<;2>H: **special-filenames (p. 97)**!#$3$NJ}K!$GDs6!$5$l$k%G!<%?$O!"$=$N plot %3%^%s%I$G0lEY$7$+;HMQ$G$-$^$;$s!#

$b$&0l$D$O!"%R%"%I%-%e%a%s%H$H$7$FL>A0IU$-$N%G!<%?%V%m%C%/$rDj5A$9$kJ}K!$G$9!#$=$NL>A0IU$-$N%G!<%?$O;D$k$N$G!"J#?t$N plot %3%^%s%I$G;2>H$G$-$^$9!#Nc:

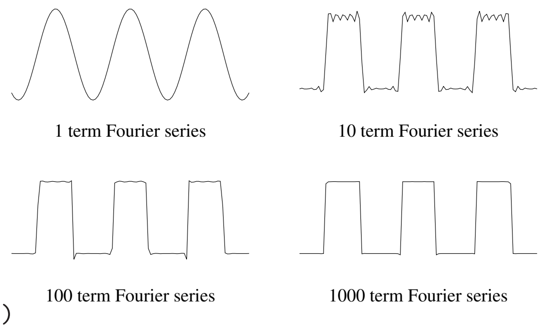
```
$Mydata << EOD
11 22 33 first line of data
44 55 66 second line of data
# %G!<%?%U%!%$%kF1MM%3%a%s%H$b5!G=$9$k
77 88 99
EOD
stats $Mydata using 1:3
plot $Mydata using 1:3 with points, $Mydata using 1:2 with impulses
```

%G!<%?%V%m%C%/L>$O!"B>$NJQ?t$H6hJL$9$k$?$a$K!":G=i$NJ8;z$r$ $K$9$kI,MW$,$"$j$^$9!#%G!<%?$N=*$o$j$N6h@Z$j(>e$NNc$G$O EOD) $O!"G$0U$N%"%k%U%!%Y%C%H!"?t;z$+$i$J$kJ8;zNs$G9=$$$^$;$s!#

%3%^%s%I **undefine** $r;H$($P!"J]B8$7$?L>A0IU$-%G!<%?%V%m%C%/$r:o=|$G$-$^$9!#**undefine $*** $O!"$9$Y$F$NL>A0IU$-%G!<%?%V%m%C%/$r0lEY$K:o=|$7$^$9!#

## 7+$jJV$7 (iteration)

gnuplot %P!<%8%g%s 4.6 $K$O!"7+$jJV$7 (iteration) %3%^%s%I$d%V%m%C%/9=B$$r07$($k if/else/while/do $,F3F~$5$l$F$$$^$9!#0J2<;2>H: **if (p. 83)**,**while (p. 203)**, **do (p. 74)**!#C1=c$J7+$jJV$7$O!"%3%^%s%I **plot**, **set** $GMxMQ$G$-$^$9!#0J2<;2>H: **plot for (p. 104)**!#J#?t$N%3%^%s%I$rJq4^$9$k0lHIE*$J7+$jJV$7$O!"2<$G>R2p$9$k%V%m%C%/9=B$$rMxMQ$9$k$3$H$G9T$($^$9!#4XO"$9$k?7$7$$5!G=$G$"$k?t<07?$N0J2<$b;2>H: **summation (p. 35)**!#0J2<$O!"$3$l$i$N?7$7$$9=J85!G=$r$$/$D$+MxMQ$7$?Nc$G$9:



```
set multiplot layout 2,2
fourier(k, x) = sin(3./2*k)/k * 2./3*cos(k*x)
do for [power = 0:3] {
    TERMS = 10**power
    set title sprintf("%g term Fourier series",TERMS)
    plot 0.5 + sum [k=1:TERMS] fourier(k,x) notitle
}
unset multiplot
```

7+$jJV$7$O!"0J2<$N$h$&$J=q<0$K$h$k7+$jJV$7;XDj$G@)8f$7$^$9!#

```
for [<var> in "string of N elements"]
```

$^$?$O

```
for [<var> = <start> : <end> { : <increment> }]
```

:G=i$N=q<0$G$O <var> $OJ8;zNsJQ?t$G!"$=$N8e$m$K;XDj$7$?J8;zNs$K4^$^$l$k 1 HVL\$+$i N HVL\$^$G$NC18lJ8;zNs$r=g$KCM$H$7$F<h$j$^$9!#2 HVL\$N=q<0$G$O!"<start>, <end>, <increment> $O@0?t!"$^$?$O@0?tCM$r<h$k?t<0$G$9!#

0l$D$NNc30$r=|$$$F!"gnuplot $NJQ?t$OBg0hE*$G$9!#L>A0$GE:;z$E$1$5$l$?!"1JB3E*$GM-8z$JJQ?t$N%j%9%H$,0l$D$@$1$"$j!"JQ?t$N3d$jEv$F$O!"$=$N%j%9%H$K9`$r@8@.$9$k$+!"$^$?$O9`$NCV$-49$($K$h$j9T$o$l$^$9!#JQ?t$r$=$N%j%9%H$+$i:o=|$9$k$?$@0l$D$NJ}K!$O!"**undefine** %3%^%s%I$r;H$&$3$H$G$9!#

$3$l$N$?$@0l$D$NNc30$O!"7+$jJV$7;XDj$GMQ$$$i$l$kJQ?t$G$9!#7+$jJV$7JQ?t$NM-8zHO0O (scope) $O!"$=$N7+$jJV$7$NCf$@$1$G$9$+$i!"$=$NCM$r!"7+$jJV$7$N<B9T%V%m%C%/Fb$+$i1JB3E*$KJQ99$9$9$k$3$H$O$G$-$^$;$s!#7+$jJV$7JQ?t$,7+$jJV$7$NA0$KCM$r;}$C$F$$$?$H$7$?$i!"$=$NCM$O7+$jJV$7$N=*N;;~$KJ];}!"$^$?$OI|5"$5$l$^$9!#Nc$($P!"0J2<$N%3%^%s%I$O!"1 2 3 4 5 6 7 8 9 10 A $r=PNO$7$^$9!#

```
i = "A"
do for [i=1:10] { print i; i=10; }
print i
```

## @~<o!"?'!"%9%?%$%k (linetypes)

8E$$HG$N gnuplot $G$O!"3F=PNO7A<0$O "@~<o (linetype)" $r$"$kDxEYMQ0U$7$F$$$F!"$=$l$i$O?'!"B@$5!"E@@~/GK@~$N%Q%?!<%s!"$^$?$O?'$HE@@~/GK@~$NAH9g$;$G0c$$$rI=8=$7$F$$$^$7$?!#$=$l$i$N?'!"E@@~/GK@~$N%Q%?!<%s$O!"=PNO7A<0$r1[$($FF1$8$b$N$K$J$k$H$$$&J]>Z$O2?$b$"$j$^$;$s$G$7$?$,!"B?$/$OF1$8?'$NNs!"@V/NP/@D/;g/?e?'/2+?'$r;HMQ$7$F$$$^$7$?!#$3$N8E$$5sF0$O!":#$O **set colorsequence classic** $GA*Br$G$-$^$9$,!"gnuplot %P!<%8%g%s 5 $N%G%U%)%k%H$O!"=PNO7A<0$KL54X78$K6&DL$N 8 ?'Ns$r;HMQ$7$^$9!#

@~<o (linetype) $NB0@-$NJB$S$O! "BPOŒ*$+=i4 |2=%U% !%$%k$N$$$ :$1$+$K$h$C$F$5$i$K%+%9%?%^%$%:2DG=$G$9! # 0J2<; 2>H: **set linetype (p. 143)** ! #G[I [%Q%C%1! <%8$K=i4 |2=%U% !%$%k$N%5%s%W%k$ ,$$$ /$D$+MQ0U$5$1$F$$$^$9! #

FCDj$N=PNO7A<0$KBP$9$k@~<o$NB0@-$N8=:_$N>uBV$O! "$=$N=PNO7A<0$r@_Dj$7$?$"$H$G **test** %3%^%s%I$r<B9T$9$k$3$H$G3NG'$G$-$^$9! #

01$D$NIA2h%3%^%s%IFb$G$N4X?t$d%G! <%?%U% !%$%k$NO"B3$9$kJB$S$K$O! "8=:_$N%G%U%)%k%H$N@~<oNs$+$i@~<o$, =gHV$K3d$jEv$F$i$1$^$9! #8D! 9$N4X?t! "%G! <%?%U% !%$%k! "$^$?$O$=$NB>$NIA2hMWAG$KBP$9$k@~<o$O! "$=$NIA2h%3%^%s%ID>e$GL@<(E*$K@~$NB0@-$r;XDj$9$k$3$H$G>e=q$-$G$-$^$9! #

Nc:

```
    plot "foo", "bar"                 # @~<o 1, 2 $G 2 %U%!%$%k$rIA2h
    plot sin(x) linetype 4            # @~<o?' 4 $r;HMQ
```

01HL$K! "?'$N;XDj$O! "?'$NL>A0$+! "RGB (@V! "NP! "@D) @.J,$+! "HSV (?'Aj! ":IEY! "L@EY) @.J,$+! "8=:_$N pm3d %Q%1%C%H$K1h$C$?:BI8$G9T$$$^$9! #

Nc:

```
    plot sin(x) lt rgb "violet"       # gnuplot $N;}$D?'L>$N01$D
    plot sin(x) lt rgb "#FF00FF"      # L@<(E*$J 16 ?J RGB 3 $DAH
    plot sin(x) lt palette cb -45     # 8=:_$N%Q%1%C%H$N cbrange $N
                                      # -45 $KBP1~$9$k?'
    plot sin(x) lt palette frac 0.3   # %Q%1%C%H$KBP1~$9$k>.?tCM
```

0J2<; 2>H: **colorspec (p. 41)**, **show colornames (p. 122)**, **hsv (p. 32)**, **set palette (p. 161)**,**cbrange (p. 195)** ! #0J2<$b; 2>H: **monochrome (p. 147)** ! #

@~<o (linetype) $K$O! "E@@~/GK@~$N%Q%?! <%s$b7k$S$D$1$i$1$F$$$^$9$,! "$9$Y$F$N=PNO7A<0$G$=$1$,;H$ ($k$o$1$G$O$"$j$^$;$s! #gnuplot %P! <%8%g%s 5 $G$O! "@~?'$H$OFHN)$KE@@~/GK@~%Q%?! <%s$r;XDj$G$-$^$9! #0J2<; 2>H:**dashtype (p. 43)** ! #

## ?';XDj (colorspec)

B?$/$N%3%^%s%I$G! "L@<(E*$J?'$N;XDj$r$H$b$J$C$?@~<o$r;XDj$9$k$3$H$,$G$-$^$9! #

=q<0:

```
     ... {linecolor | lc} {"colorname" | <colorspec> | <n>}
     ... {textcolor | tc} {<colorspec> | {linetype | lt} <n>}
```

<colorspec> $O0J2<$N7A<0$N$$$:$1$+$G$9:

```
     rgbcolor "colorname"    # Nc: "blue"
     rgbcolor "0xRRGGBB"     # 16 ?J?tCM$NDj?tJ8;zNs
     rgbcolor "0xAARRGGBB"   # 16 ?J?tCM$NDj?tJ8;zNs
     rgbcolor "#RRGGBB"      # x11 7A<0$N 16 ?J?tJ8;zNs
     rgbcolor "#AARRGGBB"    # x11 7A<0$N 16 ?J?tJ8;zNs
     rgbcolor <integer val>  # AARRGGBB $rI=$9@0?tCM
     rgbcolor variable       # F~NO%U%!%$%k$+$i@0?tCM$rFI$_9~$`
     palette frac <val>      # <val> $O 0 $+$i 1 $NCM
     palette cb <value>      # <val> $O cbrange $NHO0O$NCM
     palette z
     variable                # F~NO%U%!%$%k$+$i?'HV9f$rFI$_9~$`
     bgnd                    # GX7J?'
     black
```

<n> $O! "$=$N@~<o (linetype) HV9f$,;H$&?'$r0UL#$7$^$9! #0J2<; 2>H: **test (p. 201)** ! #

"colorname" $O gnuplot $,FbIt$K;}$C$F$$$k?'$NL>A0$N$&$A$N01$D$r;XDj$7$^$9! #M-8z$JL>A0$N01Mw$K4X$7$F$O! "0J2<; 2>H: **show colornames (p. 122)** ! #

16 ?JDj?t$O! "0zMQIdIU$-$G "#RRGGBB" $d "0xRRGGBB" $N7A$GM?$($k$3$H$,$G$-$^$9! #RRGGBB $O! "?'$N@V! "NP! "@D$N@.J,$r0UL#$7! "$=$1$>$1 00 $+$i FF $^$G$NHO0OFb$G$J$1$1$P$$$1$^$;$s! #Nc$ ($P! "%^%<%s

%?(;g) $O!":G$bL@$k$$@V+ :G$bL@$k$$@D!"$J$N$G"0xFF00FF" $HI=$5$l!"$3$l$O16 ?J?t$G(255 << 16) + (0 << 8) + (255) $r0UL#$7$F$$$^$9!#

"#AARRGGBB" $O!"RGB ?'$N>e0L%S%C%H$K%"%k%U%!CM(F)2a@-) $,$D$$$F$$$k$3$H$r0UL#$7$^$9!#%"%k%U%!CM0 $O40A4$KITF)L@?'$G$"$k$3$H$r0UL#$7!"$h$C$F"#00RRGGBB" $O"#RRGGBB" $HF1$8$K$J$j$^$9!#%"%k%U%!CM$N255 (FF) $O40A4$KF)L@$G$"$k$3$H$r0UL#$7$^$9!#Cm0U: $3$N;XDjK!$N%"%k%U%!CM$N0LCV$O!"0JA0$NHG$Ngnuplot $N2hA|IA2h%b!<%I "with rgbalpha" $K$h$k;XDj$N>l9g$NH?BP$K$J$C$F$$$^$9!#

%+%i!<%Q%l%C%H$H$O!"?'$N@~7?$J8{G[$G!"C10l$N?tCM$rF@D j$N?'$K3j$i$+$KBP1~$E$1$^$9!#>o$K$=$N$h$&$J2 $D$NBP1~IU$1$,8zNO$r;}$A$^$9!#**palette frac** $O0 $+$i1 $^$G$N>.?tCM$r!"%+%i!<%Q%l%C%H$NA4HO0O$KBP1~IU$1$k$b$N$G!"**palette cb** $O!"?'<4$NHO0O$rF1$8%+%i!<%Q%l%C%H$X3d$jEv$F$k$b$N$G$9!#0J2<;2>H: **set cbrange (p. 195)**, **set colorbox (p. 121)**)!#$3$l$i$NBP1~IU$1$N$I$A$i$+$r;H$C$F!"8=:_$N%Q%l%C%H$+$iDj?t?'$rA*$S=P$9$3$H$,$G$-$^$9!#

"palette z" $O!"3FIA2h@~J,$dIA2hMWAG$Nz $NCM$r!"%Q%l%C%H$XBP1~$E$1$i$l$F$$$k cbrange $NHO0O$KBP1~$E$1$^$9!#$3$l$K$h$j!"3 <!85$N6J@~$d6JLL$K1h$C$F?'$r3j$i$+$KJQ2=$5$;$k$3$H$,$G$-$^$9!#$3$l$O!"2 <!85IA2h$G!"%Q%l%C%HCM$rDI2C$NNs%G!<%?$+$iF I$_9~$^$;$F?'IU$1$9$k$N$K$b;H$($^$9($9$Y$F$N2 <!85IA2h%9%?%$%k$,$3$NDI2CNs$rG'<1$9$k$o$1$G$O$"$j$^$;$s)!#FC<l$J?';XDj$, 2 $D$"$j$^$9!#GX7J?'$N**bgnd** $H!"**black** $G$9!#

### Background color

B?$/$N=PNO7A<0$G%0%i%U$NGX7J?'$rL@<(E*$K@_Dj$G$-$^$9!#FCJL$J@~<o(linetype) **bgnd** $O$=$N?'$GIA2h$7$^$9$,!"$=$N **bgnd** $O?'$H$7$F$bG'<1$5$l$^$9!#Nc:

```
# 0J2<$O%-%c%s%P%9$N0lItJ,$rGX7J?'$G>e=q$-$9$k$3$H$G>C5n$7$^$9!#
set term wxt background rgb "gray75"
set object 1 rectangle from x0,y0 to x1,y1 fillstyle solid fillcolor bgnd
# 0J2<$O x <4$K1h$C$?!V8+$($J$$!W@~$rIA$-$^$9!#
plot 0 lt bgnd
```

### Linecolor variable

**lc variable** $O!"F~NO%G!<%?$N0l$D$NNs$+$iF I$s$@CM$r@~<o(linetype) $NHV9f$H$7$F;H$$!"$=$N@~<o$KB0$9$k?'$r;H$&$h$&%W%m%0%i%`$K;X<($7$^$9!#$h$C$F$3$l$O!"**using** ;XDj;R$XBP1~$9$kNs$N;XDj$NDI2C$rI,MW$H$7$^$9!#J8;z$N?'$bF1MM$K!"**tc variable** $G;XDj$G$-$^$9!#

Nc:

```
# %G!<%?$N 3 NsL\$r!"8D!9$NE@$K?'$r3d$jEv$F$k$N$K;HMQ
plot 'data' using 1:2:3 with points lc variable

# 0l$D$N%G!<%?%U%!%$%k$K$OJ#?t$N%G!<%?=89g$rF~$l$k$3$H$,2DG=$G!"
# $=$l$i$O 2 9T$N6u9T$GJ,N%$5$l$F$$$^$9!#8D!9$N%G!<%?=89g$K$O
# index CM$,3d$jEv$F$i$l$F$$$F (0J2<;2>H: `index`)!"using ;XDj$N
# column(-2) $G<hF@$G$-$^$9!#0J2<;2>H: `pseudocolumns`!#0J2<$NNc
# $O -2 $N column CM$r;H$C$F!"8D!9$N%G!<%?=89g$r0[$J$k@~?'$GIA2h
# $7$^$9!#
plot 'data' using 1:2:(column(-2)) with lines lc variable
```

### Rgbcolor variable

%0%i%U$N3F%G!<%?E@!"3F@~J,!"$^$?$O3F%i%Y%k$K$=$l$>$l0[$J$k?'$r3d$jEv$F$k$3$H$,$G$-$^$9!#**lc rgbcolor variable** $O!"%G!<%?%U%!%$%k$N3F9T$+$iRGB ?'$N>pJs$rFI$_9~$`$h$&%W%m%0%i%`$K;X<($7$^$9!#$h$C$F$3$l$O!"**using** ;XDj;R$K$h$kBP1~$9$kNs$N;XDj$NDI2C$rI,MW$H$7!"$=$NNs$O 24-bit 7A<0$N RGB $N 3 $DAH$G$"$k$H$_$J$5$l$^$9!#$=$NCM$r%G!<%?%U%!%$%k$+$iD>@\M?$($k>l9g$O!"$3$l$O:G$b4JC1$J7A<0$N 16 ?JCM$GM?$($^$9 (0J2<;2>H: **rgbcolor (p. 41)**)!#0lJ}$G!"0J2<$NNc$N$h$&$K 24-bit RGB ?'$H$7$FI>2A$5$l$k$h$&$J?t<0$r **using** ;XDj;R$KF~$l$k$3$H$b$G$-$^$9!#J8;z$N?'$bF1MM$K!"**tc rgbcolor variable** $G;XDj$G$-$^$9!#

Nc:

```
# 3 <!85IA2h$G!"3F x,y,z :BI8$KBP1~$7$?@V!"NP!"@D$N@.J,$r;}$D?'
# $N$D$$$?E@$rG[CV
rgb(r,g,b) = 65536 * int(r) + 256 * int(g) + int(b)
splot "data" using 1:2:3:(rgb($1,$2,$3)) with points lc rgb variable
```

## E@@~/GK@~<o (dashtype)

gnuplot %P!<%8%g%s 5 $G!"**linecolor** $d **linewidth** $HF1MM$K!"E@@~/GK@~%Q%?!<%s (**dashtype**) $,3F6J@~Kh$NB0@-$H$7$FFHN)$7$^$7$?!#=>Mh$N$h$&$J!";HMQCf$N=PNO7A<0$NE@@~$r=q$/$?$a$NFCJL$J%b!<%I$H$7$F;XDj$9$kI,MW$O$"$j$^$;$s!#$9$J$o$A!"**set term <termname> {solid|dashed}** $N$h$&$J%3%^%s%I$O8=:_$OL5;k$5$l$^$9!#%P!<%8%g%s 4 MQ$K=q$$$?8E$$%9%/%j%W%H$X$N8eJ}8_49@-$,I,MW$J>l9g$O!"0J2<$N$h$&$J=q$-J}$GBeMQ$G$-$^$9:

```
if (GPVAL_VERSION >= 5.0) set for [i=1:9] linetype i dashtype i
if (GPVAL_VERSION < 5.0) set termoption dashed
```

$9$Y$F$N@~$O!"$[$+$K;XDj$7$J$1$l$P!"**dashtype solid** $H$$$&B0@-$r;}$A$^$9$,!"$3$N%G%U%)%k%HCM$r%3%^%s%I **set linetype** $GFCDj$N@~<o$KJQ99$7$=$N8e$N%3%^%s%I$G;H$($k$h$&$K$G$-$^$9!#$^$?$O!"**plot** $dB>$N%3%^%s%I$N0lItJ,$H$7$F;HMQ$7$?$$E@@~/GK@~$N7?$r;XDj$G$-$^$9!#

=q<0:

```
dashtype N           # Dj5A:Q$_E@@~/GK@~7?$rHV9f$G8F$S=P$7
dashtype "pattern"   # E@ (.) 2#@~ (-) 2<@~ (_) $H6uGr$NAH$_9g$o
                     # $;J8;zNs$K$h$k;XDj
dashtype (s1,e1,s2,e2,s3,e3,s4,e4)  # 1~4 8D$N <<B@~D9>,<6uGrD9>
                     # $NAH$K$h$kE@@~/GK@~%Q%?!<%s;XDj
```

Nc:

```
# 2 $D$N4X?t$,@~<o 1 $r;H$&$, dashtype $G6hJL
plot f1(x) with lines lt 1 dt solid, f2(x) with lines lt 1 dt 3
```

$$$/$D$+$N=PNO7A<0$O!"$=$l$,Ds6!$9$kDj5A:Q$_E@@~/GK@~%Q%?!<%s$K!"%f!<%6Dj5A%Q%?!<%s$rDI2C$9$k$3$H$r%5%]!<%H$7$F$$$^$9!#

Nc:

```
plot f(x) dt 3            # =PNO7A<0$N;}$D%Q%?!<%s 3 $r;HMQ
plot f(x) dt ".. "        # 0l;~E*$J%Q%?!<%s$r:n@.
plot f(x) dt (2,5,2,15)   # F1$8%Q%?!<%s$r?tCM$GI=8=
set dashtype 11 (2,4,4,7) # ?7%Q%?!<%s$rHV9f$G8F$S=P$;$k$h$&Dj5A
plot f(x) dt 11           # ?7%Q%?!<%s$r;H$C$FIA2h
```

E@@~/GK@~%Q%?!<%s$rJ8;zNs$G;XDj$7$?>l9g!"gnuplot $O$=$l$r < <B@~D9>, < 6uGrD9> $NAH$NNs$KJQ49$7$^$9!#%I%C%H "." $O (2,5) $K!"%@%C%7%e "-" $O (10,10) $K!"2<@~ "_" $O (20,10) $K!"$^$?6uGr " " $OD>A0$N < 6uGrD9> $NCM$K 10 $rDI2C$7$^$9!#$=$N>l9g!"%3%^%s%I **show dashtype** $O!"85$NJ8;zNs$HJQ498e$N?tCM$NNs$NN>J}$rI=<($7$^$9!#

## Linestyles $H linetypes

**linestyle** $O!"B0@- linecolor, linewidth, dashtype, pointtype $N0l;~E*$JAH$_9g$o$;$G!"$3$l$O%3%^%s%I **set style line** $GDj5A$7$^$9!#0lEY linestyle $rDj5A$9$k$H!"1 2s$N plot %3%^%s%I>e$G$=$l$r;H$C$F!"1 $D!"$^$?$O$h$jB?$/$NIA2hMWAG$N8+$?L\$r@)8f$G$-$^$9!#8@$$49$($l$P!"$3$l$OCzEY linetype $+$i1JB3@-$r<h$j=|$$$?$b$N!"$H8@$&$3$H$,$G$-$k$G$7$g$&!#**linetypes** $O1JB3E* (L@<(E*$K$=$l$i$r:FDj5A$9$k$^$G$OJ]; }$5$l$k) $G$9$,!"**linestyles** $O!"<!$N%0%i%U%#%C%/$N>uBV$,%j%;%C%H$5$l$k$^$G$N4V$7$+J]; }$5$l$^$;$s!#

Nc:

```
# ?7$7$$%i%$%s%9%?%$%k$r!"=PNO7A<0$K0MB8$7$J$$?' cyan!"@~I}$, 3!"
# E@<o 6 (4]$NCf$KE@) $HDj5A
set style line 5 lt rgb "cyan" lw 3 pt 6
plot sin(x) with linespoints ls 5          # Dj5A%9%?%$%k 5 $G
```

## %l%$%d!< (layers)

gnuplot $N%0%i%U$O!"?'!9$JMWAG$r8GDj$5$l$?=gHV$GIA$->e$2$F$$$/$3$H$G9=@.$5$l$F$$$^$9!#$3$N=gHV$O!" %-!<%o!<%I **behind**, **back**, **front** $r;H$C$FMWAG$KFCDj$N3,AX$r3d$jEv$F$k$3$H$GJQ99$G$-$^$9!#Nc$($P!"%0%i %UNN0h$NGX7J?'$rJQ99$9$k$K$O!"?'$N$D$$$?D9J}7A$rB0@- **behind** $GDj5A$9$l$P$$$$$o$1$G$9!#

```
set object 1 rectangle from graph 0,0 to graph 1,1 fc rgb "gray" behind
```

IA2h$N=gHV$O0J2<$NDL$j$G$9:

```
behind
back
%0%i%U<+BN
%0%i%U$NI=Bj ('key')
front
```

3F3,AXFb$G$O!"MWAG$NIA2h$O0J2<$N=gHV$G$9:

```
HV9f=g$N%*%V%8%'%/%H (rectangle, circle, ellipse, polygon)
HV9f=g$N%i%Y%k (label)
HV9f=g$NLp0u (arrow)
```

1 %Z!<%8$KJ#?t$N%0%i%U$,$"$k>l9g (multiplot %b!<%I)!"$3$N=g=x$O!"J#?t%0%i%U$rA4BN$H$7$FE,MQ$9$k$N$G $O$J$/!"3FIA2hMWAG$KJL!9$KE,MQ$7$^$9!#

## %^%&%9F~NO (mouse input)

B?$/$N=PNO7A<0$G!"8=:_$NIA2h$K%^%&%9$r;H$C$F:nMQ$r$9$k$3$H$,2DG=$K$J$C$F$$$^$9!#$=$N$&$A$$$/$D$+$O %[%C%H%-!<$NDj5A$b%5%]!<%H$7$F$$$F!"%^%&%9%+!<%=%k$,M-8z$JIA2h%&%#%s%I%&$K$"$k$H$-$K!"$"$k%-!<$r2!$9 $3$H$G$"$i$+$8$aDj5A$7$?4X?t$r<B9T$5$;$k$3$H$,$G$-$^$9!#%^%&%9F~NO$r **batch** %3%^%s%I%9%/%j%W%H$HAH$_ 9g$o$;$k$3$H$b2DG=$G!"Nc$($P **pause mouse** $H$7$F!"$=$N8e$K%^%&%9%/%j%C%/$K$h$C$F%Q%i%a!<%?$H$7$FJV$C $FMh$k%^%&%9JQ?t$r$=$N8e$N%9%/%j%W%HF0:n$KH?1G$5$;$k$3$H$,$G$-$^$9!#0J2<; 2>H: **bind (p. 44)**,**mouse variables (p. 46)**!#$^$?0J2<$b; 2>H: **set mouse (p. 148)**!#

### Bind

=q<0:

```
bind {allwindows} [<key-sequence>] ["<gnuplot commands>"]
bind <key-sequence> ""
reset bind
```

**bind** $O!"%[%C%H%-!<$NDj5A!":FDj5A$K;HMQ$7$^$9!#%[%C%H%-!<$H$O!"F~NO%+!<%=%k$,%I%i%$%P$N%&%#%s%I%&Fb $K$"$k$H$-$K!"$"$k%-!<!"$^$?$OJ#?t$N%-!<$r2!$9$3$H$G!"gnuplot $N%3%^%s%INs$r<B9T$5$;$k5!G=$N$3$H$r 8@$$$^$9!#**bind** $O!"gnuplot $, **mouse** $r%5%]!<%H$9$k$h$&$K%3%s%Q%$%k$5$l$F$$$F$+$D%^%&%9$,M-8z$J=PNO 7A<0>e$G;H$o$l$F$k>l9g$K$N$_M-8z$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#%f!<%6;XDj$N%-!<3dEv (binding) $O!"AH $_9~$_ (builtin) %-!<3dEv$rCV$-49$($^$9$,!"<space> $H 'q' $ODL>o$O:FDj5A$O$G$-$^$;$s!#$=$NM#0l$NNc30 $K$D$$$F$O!"0J2<; 2>H: **bind space (p. 45)**!#

%^%&%9%\%?%s$O!"%\%?%s 1 $N$_!"2 <!85IA2hMQ$K$N$_Dj5A2DG=$G$9!#

%[%C%H%-!<$N0lMw$rF@$k$K$O **show bind**, $^$?$O **bind** $H%?%$%W$9$k$+!"%0%i%U%&%#%s%I%&>e$G%[%C%H%-!< 'h' $rF~NO$7$F$/$@$5$$!#

%-!<Dj5A$O!"**reset bind** $G%G%U%)%k%H$N>uBV$KI|5"$G$-$^$9!#

=$>~%-!<$r4^$ `J#?t$N%-!<$NDj5A$O0zMQId$G0O$ `I,MW$,$"$k$3$H$KCm0U$7$F$/$@$5$$!#

I8=`$G$O%[%C%H%-!<$O8=:_$NIA2h%&%#%s%I%&>e$KF~NO%+!<%=%k$,$"$k>l9g$N$_G'<1$5$l$^$9!#**bind allwindows** **<key> ...** (**bind all <key> ...** $H>JN,2D) $O!"<key> $N3dEv$r!"$=$l$,8=:_$NM-8z$J$b$N$+H]$+$K4X$o$i $:!"$9$Y$F$N gnuplot $NIA2h%&%#%s%I%&>e$G2DG=$K$7$^$9!#$3$N>l9g!"gnuplot JQ?t MOUSE_KEY_WINDOW $K$=$l$,9T$J$o$l$?%&%#%s%I%&$N ID $,J]B8$5$l$k$N$G$=$l$r%-!<$K3d$jEv$F$?%3%^%s%I$G;HMQ$9$k$3$H$,$G $-$^$9!#

Nc:

- %-!<3dEv$N@_Dj:

```
bind a "replot"
bind "ctrl-a" "plot x*x"
bind "ctrl-alt-a" 'print "great"'
bind Home "set view 60,30; replot"
bind all Home 'print "This is window ",MOUSE_KEY_WINDOW'
```

- %-!<3dEv$rI=<(:

```
bind "ctrl-a"           # ctrl-a $KBP$9$k%-!<3dEv$rI=<(
bind                    # A4$F$N%-!<Dj5A$rI=<(
show bind               # A4$F$N%-!<Dj5A$rI=<(
```

- %-!<3dEv$r:o=|:

```
bind "ctrl-alt-a" ""    # ctrl-alt-a $N%-!<3dEv$r:o=|
                          (AH$_9~$_%-!<Dj5A$O:o=|$5$l$^$;$s)
reset bind              # %G%U%)%k%H (AH$_9~$_) $N%-!<Dj5A$rF3F~
```

- %H%0%k%9%$%C%A7A<0$K%-!<3dEv:

```
 v=0
 bind "ctrl-r" "v=v+1;if(v%2)set term x11 noraise; else set term x11 raise"
```

=$>~%-!<(ctrl / alt) $OBgJ8;z>.J8;z$N6hJL$O$"$j$^$;$s$,!"%-!<$O$=$&$G$O$"$j$^$;$s:

```
ctrl-alt-a == CtRl-alT-a
ctrl-alt-a != ctrl-alt-A
```

=$>~%-!<(alt == meta) $N0lMw:

```
ctrl, alt, shift (%\%?%s 1 $G$N$_M-8z)
```

%5%]!<%H$5$l$F$$$kFC<l%-!<$N0lMw:

```
"BackSpace", "Tab", "Linefeed", "Clear", "Return", "Pause", "Scroll_Lock",
"Sys_Req", "Escape", "Delete", "Home", "Left", "Up", "Right", "Down",
"PageUp", "PageDown", "End", "Begin",

"KP_Space", "KP_Tab", "KP_Enter", "KP_F1", "KP_F2", "KP_F3", "KP_F4",
"KP_Home", "KP_Left", "KP_Up", "KP_Right", "KP_Down", "KP_PageUp",
"KP_PageDown", "KP_End", "KP_Begin", "KP_Insert", "KP_Delete", "KP_Equal",
"KP_Multiply", "KP_Add", "KP_Separator", "KP_Subtract", "KP_Decimal",
"KP_Divide",

"KP_1" - "KP_9", "F1" - "F12"
```

0J2<$O!"<B:]$N%-!<$G$O$J$/!"%&%#%s%I%&$K4X$9$k%$%Y%s%H$G$9:

```
"Button1" "Close"
```

0J2<$b;2>H: **mouse (p. 148)**!#

### Bind space

gnuplot $,!"configure ;~$K%*%W%7%g%s --enable-rase-console $r$D$1$F%$%s%9%H!<%k$5$l$?>l9g$O!"IA2h%&%#%s%I%&Fb$G <space> $r%?%$%W$9$k$Hgnuplot $N%3%^%s%I%&%#%s%I%&$,A0LL$K=P$^$9!#$3$N%[%C%H%-!<$O!"gnuplot -ctrlq' $N$h$&$K$7$F gnuplot $r5/F0$9$k$+!"$^$?$O X %j%=!<%9$N 'gnuplot*ctrlq' $r@_Dj$9$k$3$H$G ctrl-space $KJQ99$G$-$^$9!#0J2<;2>H: **x11 command-line-options (p. 262)**!#

## %^%&%9MQ$NJQ?t (Mouse variables)

**mousing** (%^%&%95!G=) $,M-8z$J>l9g!"8=:_$N%&%#%s%I%&>e$G$N%^%&%9%/%j%C%/$K$h$C$F gnuplot $N%3%^%s%I%i%$%s>e$G;H$&$3$H$,$G$-$k?'!9$J%f!<%6JQ?t$,@_Dj$5$l$^$9!#%/%j%C%/;~$N%^%&%9$N:BI8$OJQ?t MOUSE_X, MOUSE_Y, MOUSE_X2, MOUSE_Y2 $KBeF~$5$l$^$9!#%/%j%C%/$5$l$?%\%?%s$d!"$=$N$H$-$N%a%?%-!<$N>uBV$O MOUSE_BUTTON, MOUSE_SHIFT, MOUSE_ALT, MOUSE_CTRL $KBeF~$5$l$^$9!#$3$l$i$NJQ?t$OG$0U$NIA2h$N3+;O;~$K$OL$Dj5A$G!"M-8z$JIA2h%&%#%s%I%&Cf$G$N%^%&%9%/%j%C%/%$%Y%s%H$K$h$C$F=i$a$FDj5A$5$l$^$9!#M-8z$JIA2h%&%#%s%I%&Cf$G%^%&%9$,4{$K%/%j%C%/$5$l$?$+$I$&$+$r%9%/%j%W%H$+$iD4$Y$k$K$O!"$3$l$i$NJQ?t$N$&$A$N$I$l$+0l$D$,Dj5A$5$l$F$$$k$+$I$&$+$r%A%'%C%/$9$l$P==J,$G$9!#

```
plot 'something'
pause mouse
if (exists("MOUSE_BUTTON")) call 'something_else'; \
else print "No mouse click."
```

IA2h%&%#%s%I%&>e$G$N0lO"$N%-!<F~NO$rDI@W$9$k$3$H$b!"%^%&%9%3!<%I$r;H$&$3$H$G2DG=$H$J$j$^$9!#

```
plot 'something'
pause mouse keypress
print "Keystroke ", MOUSE_KEY, " at ", MOUSE_X, " ", MOUSE_Y
```

**pause mouse keypress** $,!"%-!<F~NO$G=*N;$7$?>l9g$O MOUSE_KEY $K$O2!$5$l$?%-!<$N ASCII %3!<%I$,J]B8$5$l$^$9!#MOUSE_CHAR $K$O$=$NJ8;z<+?H$,J8;zNsCM$H$7$FJ]B8$5$l$^$9!#pause %3%^%s%I$,(Nc$($P ctrl-C $dIA2h%&%#%s%I%&$,30It$+$iJD$8$i$l$k$J$I$7$F) 0[>o=*N;$7$?>l9g$O MOUSE_KEY $O -1 $K$J$j$^$9!#

%^%&%9$K$h$k3HBg$N8e$N?7$7$$IA2hHO0O$O!"GPVAL_X_MIN, GPVAL_X_MAX, GPVAL_Y_MIN, GPVAL_Y_MAX $G;2>H$G$-$k$3$H$KCm0U$7$F$/$@$5$$!#0J2<;2>H: **gnuplot-defined variables (p. 35)**!#

## ;DN1 (Persist)

gnuplot $NB?$/$N=PNO7A<0 (aqua, pm, qt, x11, windows, wxt, ...) $,!"%9%/%j!<%s>e$K%0%i%U$r$=$NCf$KIA$$$?I=<(MQ$N%&%#%s%I%&$rJL$K3+$-$^$9!#%*%W%7%g%s **persist** $O!"<g$?$k%W%m%0%i%`$,=*N;$7$?$H$-$K$b!"$=$l$i$N%&%#%s%I%&$r;D$9$h$& gnuplot $K;X<($7$^$9!#$3$l$O!"HsBPOC7?=PNO7A<0=PNO$G$O2?$b$7$^$;$s!#Nc$($P!"0J2<$N%3%^%s%I$r<B9T$9$k$H

```
gnuplot -persist -e 'plot [-5:5] sinh(x)'
```

gnuplot $O!"I=<(%&%#%s%I%&$r3+$-!"$=$NCf$K%0%i%U$rIA$-!"$=$7$F=*N;$7!"I=<(%&%#%s%I%&$O%0%i%U$r$=$NCf$K;}$C$?$^$^%9%/%j!<%s$K;D$j$^$9!#=PNO7A<0$K$h$C$F$O!"$=$N;D$C$?%&%#%s%I%&>e$G$bB?>/$N%^%&%9A`:n$,2DG=$J>l9g$b$"$j$^$9!#$7$+$7!"%0%i%U$N:FIA2h$rMW5a$9$k%:!<%`($H$=$N5U) $N$h$&$JA`:n$O!"4{$K%W%m%0%i%`$,=*N;$7$F$$$k$N$G0lHIE*$K$OL5M}$G$9!#

?7$7$$=PNO7A<0$r@_Dj$9$k$H$-$K$b **persist** $d **nopersist** $r;XDj$G$-$^$9!#Nc:

```
set term qt persist size 700,500
```

## IA2h (Plotting)

**gnuplot** $K$O%0%i%U$rIA2h$9$k4 $D$N%3%^%s%I **plot**, **splot**, **replot**, **refresh** $,$"$j$^$9!#B>$N%3%^%s%I$O!":G=*E*$K%0%i%U>e$K@8@.$5$l$kIA2hMWAG$d!"%l%$%"%&%H!"%9%?%$%k$N@)8f$r9T$$$^$9!#**plot** $O 2 <!85%0%i%U$r@8@.$7$^$9!#**splot** $O 3 <!85%0%i%U ($b$A$m$s<B:]$K$O$=$N 2 <!85LL$X$N<MlF) $r@8@.$7$^$9!#**replot** $O!"D>A0$N **plot** $d **splot** %3%^%s%I$r:F<B9T$7$^$9!#**refresh** $O!"**replot** $H;w$F$$$^$9$,!"F~NO%G!<%?$r%U%!%$%k$dF~NO%9%H%j!<%`$+$i:FFI$_9~$_$9$kBe$o$j$K!"A0$KJ]B8$7$?%G!<%?$r:F;HMQ$7$^$9!#

$3$l$i4 $D$N%3%^%s%I$N$&$A$N0l$D$r<B9T$7$?>l9g$O!"8=:_Dj5A$5$l$F$$$k<4!"%i%Y%k!"%?%$%H%k!"$*$h$S85$N plot %3%^%s%I$G;XDj$5$l$?$5$^$6$^$J4X?t$d%G!<%?$N$9$Y$F$r4^$`=PNO$N%9%/%j!<%s$r:FIA2h$9$k$+!"?7$7$$=PNO%Z!<%8$r@8@.$7$^$9!#$b$7!"0l$D$N%Z!<%8$KJ#?t$N%0%i%U$rNY$j9g$&$h$&$KJB$Y$F=PNO$7$?$$>l9g!"Nc

$ ($PJ#?t$N?^$N%Q%M%k$r:n@.$7$?$j!"Bg$-$J%0%i%U$NCf$K>.$5$J%0%i%U$rA^F~$7$?$j$7$?$$>l9g$O!"%3%^%s%I **set multiplot** $r;HMQ$7!"3FIA2h%3%^%s%I$G?7$7$$%Z!<%8$,:n$i$l$k$N$rM^@)$7$F$/$@$5$$!#

IA2h$K4X$9$k0lHIE*$J>pJs$NBgH>$O!"**plot** $K4X$9$k9`$G8+$D$+$j$^$9!#3 <!85IA2h$K8GM-$N>pJs$O **splot** $N9`$K$"$j$^$9!#

**plot** $O xy D>8r:BI87O$H6K:BI87O$,;H$ ($^$9!#0J2<;2>H: **set polar (p. 166)**!#**splot** $O xyz D>8r:BI8$,;H$ ($^$9$,!"3 <!856K:BI8!"1_Cl:BI8%G!<%?$bF~NO$G$-$^$9!#0J2<;2>H: **set mapping (p. 146)**!#**plot** $G$O!"4 $D$N6-3&x (2<), x2 (>e), y (:8), y2 (1&) $r$=$1$>$lFHN)$K<4$H$7$F07$&3$H$b$G$-$^$9!#%*%W%7%g%s **axes** $G!"M?$ ($i$1$?4X?t$d%G!<%?=89g$r$I$N<4$N%Z%"$GI=<($5$;$k$+$rA*$Y$^$9!#$^$?!"3F<4$N=L<\$d8+=P$7$E$1$r40A4$K@)8f$9$k$?$a$K==J,$JJd:4$H$J$k **set** %3%^%s%I72$,B8:_$7$^$9!#$$/$D$+$N%3%^%s%I$O!"**set xlabel** $N$h$&$K<4$NL>A0$r$=$NCf$K;}$C$F$$$^$97!"$=$10J30$N$b$N$O **set logscale xy** $N$h$&$K!"1 $D!"$^$?$OJ#?t$N<4$NL>A0$r%*%W%7%g%s$H$7$F$H$j$^$9!#z <4$r@)8f$9$k%*%W%7%g%s$d%3%^%s%I$O2 <!85%0%i%U$K$O8zNO$r;}$A$^$;$s!#

**splot** $O!"E@$d@~$K2C$($F6JLL$dEy9b@~$r=q$/$3$H$,$G$-$^$9!#3 <!85$N4X?t$N3J;RDj5A$K4X$9$k>pJs$K$D$$$F$O!"0J2<;2>H: **set isosamples (p. 136)**!#3 <!85%G!<%?$N%U%!%$%k$KI,MW$J7ABV$K$D$$$F$O!"0J2<;2>H: **splot datafile (p. 196)**!#Ey9b@~$K4X$9$k>pJs$K$D$$$F$O!"0J2<;2>H: **set contour (p. 122)**, **set cntrlabel (p. 118)**,**set cntrparam (p. 119)**!#

**splot** $G$N=L<\$d8+=P$7IU$1$N@)8f$O!"z <4$K$bM-8z$G$"$k$3$H!"$*$h$Sx2 <4!"y2 <4$N%i%Y%kIU$1$, **set view map** $r;H$C$F:n$i$1$k5?;wE*$J2 <!85IA2h$K$N_2DG=$G$"$k$3$H$r=|$1$P **plot** $HA4$/F1$8$G$9!#

## =i4 |2= (Startup (initialization))

5/F0;~$K!"gnuplot $O$^$:%7%9%F%`MQ$N=i4 |@_Dj%U%!%$%k **gnuplotrc** $rC5$7$^$9!#$=$N%U%!%$%k$NCV$->l=j$O gnuplot $N%$%s%9%H!<%k;~$K7hDj$5$1!"**show loadpath** $GCN$k$3$H$,$G$-$^$9!#<!$K%f!<%6$N [!<%`%G%#%l%/%H%jFb$K8D?MMQ$N@_Dj%U%!%$%k$rC5$7$^$9!#$=$N%U%!%$%k$O Unix 7O$N%7%9%F%`$G$O **.gnuplot** $G$"$j!"$=$N B>$N=hM}7O$G$O **GNUPLOT.INI** $H$J$C$F$$$^$9!#(OS/2 $G$O!"4D6-JQ?t **GNUPLOT** $K@_Dj$5$l$F$$$k L>A0$N%G%#%l%/%H%jFb$K$=$l$rC5$7$^$9; Windows $G$O!"**APPDATA** $r;HMQ$7$^$9)!#Cm0U: %$%s%9%H!<%k ;~$K **gnuplot** $,:G=i$K%+%l%s%H%G%#%l%/%H%j$rC5$9$h$&$K@_Dj$G$-$^$9$,!"%;%-%e%j%F%#>e4m81$J$N$G=$1 $O?d>)$7$^$;$s!#

## J8;zNsDj?t$HJ8;zNsJQ?t (Strings)

J8;zNsDj?t$K2C$($F!"$[$H$s$I$N gnuplot %3%^%s%I$OJ8;zNsJQ?t!"J8;zNs<0$^$?$OJ8;zNs$rJV$94X?t$b<u$1IU$1$^$9!#Nc$($P!"0J2<$N 4 $D$N plot $N$d$jJ}$O7k2L$H$7$FA4$FF1$8IA2h%?%$%H%k$r@8@.$7$^$9:

```
four = "4"
graph4 = "Title for plot #4"
graph(n) = sprintf("Title for plot #%d",n)

plot 'data.4' title "Title for plot #4"
plot 'data.4' title graph4
plot 'data.4' title "Title for plot #".four
plot 'data.4' title graph(4)
```

@0?t$O!"$=$1$,J8;zNs7k9g1i;;;R (J8;z '.') $K$h$C$F:nMQ$5$1$?>l9g$O!"J8;zNs$KJQ49$5$1$^$9$N$G!"0J2<$N Nc$b>e$HF1MM$KF0:n$7$^$9:

```
N = 4
plot 'data.'.N title "Title for plot #".N
```

0lHL$K!"%3%^%s%I%i%$%s$N3FMWAG$O!"$=$1$i$,I8=`E*$J gnuplot $X$NL?NaJ8K!$N0lItJ,$HG'<1$5$1$k$b$N0J30$O!"M-8z$JJ8;zNsJQ?t$H$7$F$NI>2A$N$_$,9T$J$o$1$^$9!#$h$C$F!"0J2<$N%3%^%s%INs$O!"62$i$/$O: .Mp$r0z$-5/$3$5$J$$$h$&$KHr$1$i$1$k$Y$-$G$9$,!"J8K!E*$K$O4V0c$C$F$O$$$^$;$s:

```
plot = "my_datafile.dat"
title = "My Title"
plot plot title title
```

<!$N3 $D$NFs9`1i;;;R$OJ8;zNs$K:nMQ$7$^$9: J8;zNs$N7k9g1i;;;R ".", J8;zNs$NEy9f1i;;;R "eq", $*$h$SJ8;zNs$NITEy9f1i;;;R "ne" $G$9!#0J2<$NNc$G$O TRUE $,I=<($5$l$^$9!#

```
if ("A"."B" eq "AB") print "TRUE"
```

0J2<$b;2>H: 2 $D$NJ8;zNs=q<04X?t **gprintf (p. 131)**, **sprintf (p. 32)**!#

G$0U$NJ8;zNs!"J8;zNsJQ?t!"J8;zNsCM4X?t$K!"HO0O;XDj;R$r$D$1$k$3$H$K$h$jItJ,J8;zNs$r;XDj$G$-$^$9!#HO0O;XDj;R$O [begin:end] $N7A$G!"begin $OItJ,J8;zNs$N@hF,0LCV!"end $O:G8e$N0LCV$G$9!#0LCV;XDj$O!":G=i$NJ8;z$r1 HVL\$H8+$^$9!#@hF,$N0LCV!":G8e$N0LCV$O6u!"$"$k$$$O '*' $G$b9=$$$^$;$s!#$=$N>l9g!"$=$l$O85$NJ8;zNs<+BN$N@hF,!"$"$k$$$O:G8e$r0UL#$7$^$9!#Nc$($P!"str[:] $d str[*:*] $O$I$A$i$b str $NJ8;zNsA4BN$r0UL#$7$^$9!#

## CV49$H%3%^%s%I%i%$%s%^%/%m (Substitution)

gnuplot $X$NL?NaJ8;zNs$,:G=i$KFI$_9~$^$l$?;~E@!"$9$J$o$A$^$@$=$l$,2r<a$5$l!"$b$7$/$O<B9T$5$l$kA0$NCJ3,$G!"2 $D$N7A<0$NC18l$NCV49$,<B9T$5$l$^$9!#$=$l$i$O5U0zMQId (!.) (ASCII HV9f 96) $G0O$^$l$F$$$k$+!"$^$?$O @ (ASCII HV9f 64) $,F,$K$D$$$?J8;zNs$KBP$7$F9T$J$o$l$^$9!#

## 5U0zMQId$K$h$k%7%9%F%`%3%^%s%I$NCV49 (Substitution backquotes)

%7%'%k%3%^%s%I$r5U0zMQId (!.) $G0O$`$3$H$K$h$C$F%3%^%s%ICV49$r9T$&$3$H$,$G$-$^$9!#$3$N%3%^%s%I$O;R%W%m%;%9$G<B9T$5$l!"$=$N=PNO7k2L$G%3%^%s%I%i%$%s$N5U0zMQId$G0O$^$l$?ItJ,$rCV$-49$($^$9!#%7%9%F%`%3%^%s%I$N=*N;%9%F!<%?%9$O!"JQ?t GPVAL_SYSTEM_ERRNO $H GPVAL_SYSTEM_ERRMSG $KJV$5$l$^$9!#0J2<;2>H: **system (p. 201)**!#

%3%^%s%ICV49$O!"C10l0zMQIdFb$NJ8;zNs0J30$O!"**gnuplot** $N%3%^%s%I%i%$%sCf!"$I$3$G$G$b;HMQ2DG=$G$9!#

Nc:

0J2<$NNc$O!"**leastsq** $H$$$&%W%m%0%i%`$r<B9T$7!"$=$N=PNO7k2L$G!"**leastsq** $r ($^$o$j$N0zMQId$3$_$G) CV$-49$($^$9:

```
f(x) = `leastsq`
```

$?$@$7 VMS $G$O!"

```
f(x) = `run leastsq`
```

0J2<$O8=:_$NF|IU$H%f!<%6!<L>$N%i%Y%k$r@8@.$7$^$9:

```
set label "generated on `date +%Y-%m-%d` by `whoami`" at 1,1
set timestamp "generated on %Y-%m-%d by `whoami`"
```

## J8;zNsJQ?t$N%^%/%mCV49 (Substitution macros)

J8;z @ $O!"%3%^%s%I%i%$%s>e$G$=$NJ8;zNsJQ?t$NCM$X$NCV49$r9T$J$&$N$K;H$o$l$^$9!#J8;zNsJQ?t$NCM$H$7$F$NJ8$O!"J#?t$NC18l$+$i$J$k$3$H$b2DG=$G$9!#$3$l$K$h$jJ8;zNsJQ?t$r%3%^%s%I%i%$%s%^%/%m$H$7$F;H$&$3$H$,2DG=$K$J$j$^$9!#$3$N5!G=$K$h$jE83+$G$-$k$N$OJ8;zNsDj?t$N$_$G!"J8;zNs$rCM$K<h$k?t<0$r;H$&$3$H$O$G$-$^$;$s!#Nc:

```
style1 = "lines lt 4 lw 2"
style2 = "points lt 3 pt 5 ps 2"
range1 = "using 1:3"
range2 = "using 1:5"
plot "foo" @range1 with @style1, "bar" @range2 with @style2
```

$3$N @ 5-9f$r4^$`9T$O!"$=$NF~NO;~$KE83+$5$l!"$=$l$,<B:]$K<B9T$5$l$k$H$-$K$O<!$N$h$&$KA4ItBG$A9~$s$@>l9g$HF1$8$3$H$K$J$j$^$9!#

```
plot "foo" using 1:3 with lines lt 4 lw 2, \
     "bar" using 1:5 with points lt 3 pt 5 ps 2
```

4X?t exists() $O%^%/%m$NI>2A$K4X$7$FM-MQ$G$7$g$&! #0J2<$NNc$O! "C $,0BA4$K%f!<%6Dj5AJQ?t$NL>A0$KE83+$G$-$k$+$I$&$+$r%A%'%C%/$7$^$9! #

```
C = "pi"
if (exists(C)) print C," = ", @C
```

%^%/%m$NE83+$O! "C10l0zMQIdFb! "$^$?$OFs=E0zMQIdFb$G$O9T$J$o$l$^$;$s$,! "5U0zMQId(!.) Fb$G$O%^%/%mE83+$5$l$^$9! #

%^%/%m$NE83+$O! "gnuplot $,?7$7$$%3%^%s%I9T$r8+$?$H$-$KHs>o$KAa$$CJ3,$Ggnuplot $,=hM}$7! "$=$7$F$?$@0lEY$@$1$=$l$r9T$$$^$9! #$h$C$F! "

```
A = "c=1"
@A
```

$N$h$&$J%3!<%I$O@5$7$/<B9T$7$^$9$,! "0J2<$N$h$&$J9T$O$@$a$G$9! #$=$l$O! "%^%/%m$NDj5A$,F1$89T$K$"$k$?$aE83+$K4V$K9g$o$J$$$+$i$G$9! #

```
A = "c=1"; @A   # will not expand to c=1
```

%3%^%s%I$r4 0@.$5$;$F<B9T$9$k$K$O! "%3%^%s%I **evaluate** $bM-MQ$G$7$g$&! #

## J8; zNsJQ?t! "%^%/%m! "%3%^%s%I%i%$%sCV4 9 (mixing_macros_backquotes)

J8; zNsJQ?t$d5U0zMQId(!.) $K$h$kCV4 9! "%^%/%m$K$h$kCV4 9$NAj8_4X78$O>/$7$d$d$3$7$$$G$9! #5U0zMQId$O%^%/%mCV4 9$rK8$2$J$$$N$G! "

```
filename = "mydata.inp"
lines = ‘ wc --lines @filename | sed "s/ .*//" ‘
```

$O! "mydata.ipn $N9T?t$r@0?tJQ?t lines $KJ]B8$9$k$3$H$K$J$j$^$9! #$^$?! "Fs=E0zMQId$O5U0zMQId$NCV4 9$rK8$2$J$$$N$G! "

```
mycomputer = "‘uname -n‘"
```

$O! "%7%9%F%`%3%^%s%I **uname -n** $NJV$9J8; zNs$rJ8; zNsJQ?t mycomputer $KJ]B8$9$k$3$H$K$J$j$^$9! #

$7$+$7! "%^%/%mCV4 9$OFs=E0zMQIdFb$G$O5!G=$7$J$$$N$G! "%7%9%F%`%3%^%s%I$r%^%/%m$H$7$FDj5A$7$F$=$l$r%^%/%m$H$7$FMxMQ$7$+$D5U0zMQIdCV4 9$r9T$J$&$3$H$O$G$G$-$^$;$s! #

```
machine_id = "uname -n"
mycomputer = "‘@machine_id‘"  # $&$^$/$$+$J$$ !
```

$3$N<:GT$O! "Fs=E0zMQId$, @machine_id $r%^%/%m$H$7$F2r<a$9$k$3$H$rK8$2$F$$$k$+$i$G$9! #%7%9%F%`%3%^%s%I$r%^%/%m$H$7$FJ]B8$7! "$=$N8e$=$l$r<B9T$9$k$K$O! "5U0zMQId<+BN$b%^%/%mFb$K4^$a$kI,MW$,$"$j$^$9! #$3$l$O0J2<$N$h$&$K%^%/%m$rDj5A$9$k$3$H$G<B8=$G$-$^$9! #sprintf $N=q<0$K$O3 <oN`$N0zMQIdA4$F$,F~$l; R$K$J$C$F$$$k$3$H$KCm0U$7$F$/$@$5$$! #

```
machine_id = sprintf(’"‘uname -n‘"’)
mycomputer = @machine_id
```

# 6h@Z$j$d%+%C%3$N; H$$J} (Syntax)

%j%9%H$d:BI8$,%3%s%^ (,) 6h@Z$j$G$"$k$N$KBP$7! "%*%W%7%g%s$d$=$l$KH<$&%Q%i%a!<%?$O%9%Z!<%9 ( ) 6h@Z$j$G$9! #H00O$O%3%m%s (:) $G6h@Z$C$F$+$.$+$C$3 ([]) $G$/$/$j$^$9$7! "J8; zNs$d%U%!%$%kL>$O0zMQId$G$/$/$j! "B>$K$$/$D$+%+%C%3 (()) $G$/$/$k$b$N$,$"$j$^$9! #

%3%s%^$O0J2<$N6h@Z$j$G; HMQ$5$l$^$9! #**set** %3%^%s%I$N **arrow**, **key**, **label** $N:BI8; Ev$F$O$a (fit) $i$l$kJQ?t$N%j%9%H (%3%^%s%I **fit** $N%-!<%o!<%I **via** $KB3$/%j%9%H); %3%^%s%I **set cntrparam** $G; XDj$5$l$k$H$S$H$S$NEy9b@~$NCM$d$=$N%k!<%W%Q%i%a!<%?$N%j%9%H; **set** %3%^%s%I$N **dgrid3d dummy**, **isosamples**, **offsets**, **origin**, **samples**, **size**, **time**, **view** $N0z?t; L\@9$j$N0LCV$d$=$N%k!<%W%Q%i%a!<%?$N%j%9%H; %?%$%H%k$d<4$N8+=P$7$N

0LCV; **plot**, **replot**, **splot** %3%^%s%I$Nx,y,z :BI8$N7W;;$K;H$o$l$kG^2pJQ?t4X?t$N%j%9%H; **plot**, **replot**, **splot** %3%^%s%I$NJ#?t$NIA2h (%G!<%?!"$^$?$O4X?t) $N$=$l$>$l$N0lO"$N%-!<%o!<%I$N%j%9%H!#

(4]) %+%C%3$O!"L\@9$j$N8+=P$7$r (%k!<%W%Q%i%a!<%?$G$O$J$/) L@<(E*$K=89gM?$($k>l9g$N6h@Z$j$H$7$F!"$^$?$O **fit**, **plot**, **replot**, **splot** %3%^%s%I$N **using** %U%#%k%?$G$N7W;;$r;X<($9$k$?$a$K;H$o$l$^$9!#

(%+%C%3$d%3%s%^$OCDL>o$N4X?t$NI=5-$G$b;H$o$l$^$9!#)

$+$.$+$C$3$O!"**set**, **plot**, **splot** %3%^%s%I$G$OHO0O$r6h@Z$k$N$K;H$o$l$^$9!#

%3%m%s$O **range** (HO0O) ;XDj (**set**, **plot**, **splot** %3%^%s%I$G;H$o$l$k) $NN>C<$NCM$r6h@Z$k$N$K!"$^$?$O **plot**, **replot**, **splot**, **fit** %3%^%s%I$N **using** %U%#%k%?$N3F% (%s%H%j$r6h@Z$k$N$K;H$o$l$^$9!#

%;%_%3%m%s (;) $O!"0l9T$N%3%^%s%I9TFb$GM?$($i$l$kJ#?t$N%3%^%s%I$r6h@Z$k$N$K;H$o$l$^$9!#

Cf%+%C%3 ({}) $O!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $N5-=R$d!"if/then/else J8$N%V%m%C%/$N6h@Z$j$H$7$F;H$o$l$^$9$7!"$^$?$OJ#AG?t$r5-=R$9$k$N$K$b;H$o$l$^$9: {3,2} = 3 + 2i $H$J$j$^$9!#

EEPIC, Imagen, Uniplex, LaTeX, TPIC $N3F=PNO7A<0$G$O!"C10l0zMQId$Fb$N\\ $^$?$OFs=E0zMQIdFb$N\\\\ $G2~9T$r<($9$3$H$,2DG=$G$9!#

## 0zMQId (Quotes)

gnuplot $O!"J8;zNs$r6h@Z$k$N$K!"Fs=E0zMQId (ASCII %3!<%I 34 HV)!"C10l0zMQId (ASCII %3!<%I 39 HV)!"$*$h$S5U0zMQId (!.) (ASCII %3!<%I 96 HV) $N3 <oN`$N0zMQId$r;H$$$^$9!#

%U%!%$%kL>$OC10l0zMQId!"$"$k$$$OFs=E0zMQIdFb$G0O$_$^$9!#$3$N%^%K%e%"%k$G$O0lHL$K%3%^%s%I$NNc<($G$O!"$o$+$j$d$9$/$9$k$?$a$K%U%!%$%kL>$OC10l0zMQId$G$/$/$j!"B>$NJ8;zNs$OFs=E0zMQId$G$/$/$j$^$9!#

8+=P$7 (label)!"%?%$%H%k (title)!"$^$?$O$=$NB>$NIA2hMWAG$G;HMQ$5$l$kJ8;zNsDj?t$dJ#?t9TJ8;zNs$OC10l0zMQId!"$"$k$$$OFs=E0zMQIdFb$G0O$_$^$9!#0zMQId$G0O$^$l$?J8;zNs$N$5$i$J$k=hM}$N7k2L$O!"$I$N0zMQId5-9f$rA*$V$+$K$h$C$FJQ$o$j$^$9!#

\n (2~9T) $d \345 (8 ?JI=5-$NJ8;z%3!<%I) $N$h$&$J%P%C%/%9%i%C%7%e (\) $K$h$kFC<lJ8;zI=8=$O!"2 =E0zMQIdFb$NJ8;zNs$G$N$_8zNO$r;}$A$^$9!#C10l0zMQIdFb$G$O!"%P%C%/%9%i%C%7%e<+BN$,DL>o$NJ8;z$H8+$J$5$l$^$9!#C10l0zMQIdFb$NJ8;zNs$GC10l0zMQId<+BN (ASCII %3!<%I 39 HV) $r;H$&$K$O!"$=$l$r=E$M$F=q$/I,MW$,$"$j$^$9!#$D$^$j!"J8;zNs "d\" s' b\\" $H!"'d" s'' b\' $O40A4$KF1$8$b$N$H$J$j$^$9!#

1 $D$NJ#?t9TJ8;zNs$K4X$9$k9TB7$($O3F9T$KF1Ey$KF/$-$^$9!#$h$C$F!"Cf1{$K9TB7$($5$l$?J8;zNs

```
"This is the first line of text.\nThis is the second line."
```

$O<!$N$h$&$KI=<($5$l$^$9:

```
                         This is the first line of text.
                            This is the second line.
```

$7$+$7

```
'This is the first line of text.\nThis is the second line.'
```

$@$H<!$N$h$&$K$J$j$^$9!#

```
         This is the first line of text.\nThis is the second line.
```

3HD%J8;zNs=hM} (enhanced text processing) $OFs=E0zMQId$KBP$7$F$bC10l0zMQId$KBP$7$F$b5!G=$7$^$9!#$7$+$7!"$=$N%b!<%I$r%5%]!<%H$7$F$$$k=PNO7A<0$G$N$_F/$-$^$9!#0J2<;2>H: **enhanced text (p. 27)**!#

5U0zMQId$O, %3%^%s%I%i%$%sCf$NCV4 9$N$?$a$K%7%9%F% `%3%^%s%I$r0O$`$N$K;H$$$^$9!#0J2<;2>H: **substitution (p. 48)**!#

## ;~4V/F|IU%G!<%? (Time/Date)

**gnuplot** $OF~NO%G!<%?$H$7$F;~4V/F|IU>pJs$N;HMQ$r%5%]!<%H$7$F$$$^$9!#$3$N5!G=$O **set xdata time**, **set ydata time** $J$I$N%3%^%s%I$K$h$C$FM-8z$K$J$j$^$9!#

FbIt$G$OA4$F$N;~4V/F|IU$O 1970 G/$+$i$NIC?t$KJQ49$5$l$^$9!#%3%^%s%I **set timefmt** $OA4$F$NF~NO$KBP$9$k%G%U%)%k%H$N=q<0$rDj5A$7$^$9!#%G!<%?%U%!%$%k!"HO0O!"<4$NL\@9$j$N8+=P$7!"%i%Y%k$N0LCV$H!"F|;~%G!<

%?CM$r<u$1F~$1$k$9$Y$F$N$b$N$X$NF~NO$N=q<0$,!"%G%U%)%k%H$G$3$1$K$J$j$^$9!#0l;~$K$O01$D$N%G%U%)%k%H F~NO=q<0$N$_$,M-8z$G$9!#$h$C$F!"%U%!%$%kFb$Nx $Hy $NN>J}$,;~4V/F|IU%G!<%?$G$"$k>19g$O!"%G%U%)%k%H $G$O$=$1$OF1$8=q<0$H2r<a$5$1$^$9!#$7$+$7!"$3$N%G%U%)%k%H$O!"**using** ;XDj$G4X?t **timecolumn** $rMQ$$$F!" $=$1$KBP1~$9$kFOj$N%U%!%$%k$dNs$+$i%G!<%?$rFI$_$3$`$3$H$K$h$j!"JQ$($k$3$H$,2DG=$G$9!#

IC?t$X (IC?t$+$i) $NJQ49$O9q:]I8=`;~ (UT; %0%j%K%C%8I8=`;~ (GMT) $HF1$8) $,;H$o$1$^$9!#3F9qI8=`;~ $d2F;~4V$X$NJQ49$N5!G=$O2?$b; }$A9g$o$;$F$$$^$;$s!#$b$7%G!<%?$,$9$Y$FF1$8I8=`;~4VBS$K=>$C$F$$$k$J$i ($=$7$FA4$F$,2F;~4V$+!"$=$&$G$J$$$+$N$I$A$i$+0lJ}$K$N$_=>$&$J$i) $3$1$K4X$7$F2?$b?4G[$9$k$3$H$O$"$j $^$;$s!#$7$+$7!"$"$J$?$,;HMQ$9$k%"%W%j%1!<%7%g%s$G@dBPE*$J;~9o$r8 7L)$K9M;!$7$J$1$1$P$$$1$J$$>19g$O!" $"$J$?<+?H$,UT $KJQ49$9$Y$-$G$7$g$&!#

**show xrange** $N$h$&$J%3%^%s%I$O!"$=$N@0?tCM$r **timefmt** $K=>$C$F2r<a$7D>$7$^$9!#**timefmt** $rJQ99$7 $F$b$&0lEY **show** $G$=$NCM$rI=<($5$;$k$H!"$=$1$O?7$7$$ **timefmt** $K=>$C$FI=<($5$1$^$9!#$3$N$?$a!"(**set xdata** $J$I$K$h$j) $=$N<4$KBP$9$k%G!<%?7?$r%j%;%C%H$9$k$H!"$=$NCM$O@0?tCM$H$7$FI=<($5$1$k$3$H$K$J$j $^$9!#

%3%^%s%I **set format** $^$?$O **set tics format** $O!";XDj$5$1$?<4$KBP$9$kF~NO$,;~4V/F|IU$G$"$k$J$7$K4X$o $i$:L\@9$j$N8+=P$7$K;H$o$1$k=q<0$rDj5A$7$^$9!#

;~4V/F|IU>pJs$,%U%!%$%k$+$iIA2h$5$1$k>19g!"**plot**, **splot** %3%^%s%I$G$O **using** %*%W%7%g%s$r!VI,$:!W;H$& I,MW$,$"$j$^$9!#**plot**, **splot** $G$O3F9T$N%G!<%?Ns$NJ,N%$K%9%Z!<%9$r;H$$$^$9$,!";~4V/F|IU%G!<%?$O$=$NCf $K%9%Z!<%9$r4^$_F@$k$+$i$G$9!#$b$7%?%V6h@Z$j$r;HMQ$7$F$$$k$N$J$i!"$"$J$?$N%7%9%F%`$,$=$1$r$I$&07$& $+3N$+$a$k$?$a$K2?EY$b%F%9%H$9$kI,MW$,$"$k$G$7$g$&!#

4X?t **time** $O!"8=:_$N%7%9%F%`;~9o$rF@$k$N$K;H$($^$9!#$3$NCM$O!"**strftime** 4X?t$GF|;~J8;zNs$KJQ49$G$-$^ $9$7!"**timecolumn** $HAH$_9g$o$;$FAjBPE*$JF|;~%0%i%U$r:n@.$9$k$N$K$b;H$($^$9!#0z?t$N7?$O$=$1$,JV$9$b $N$r7hDj$7$^$9!#0z?t$,@0?t$N>19g$O time() $O8=:_$N;~9o$r 1970 G/ 1 7n 1 F|$+$i$N@0?t$H$7$FJV$7!"0z?t $,<B?t ($^$?$OJ#AG?t) $J$i$PF1MM$NCM$r<B?t$H$7$FJV$7$^$9$,!">.?t (IC0J2<) ItJ,$N@:EY$O!"%*%Z%l!<%F%# %s%0%7%9%F%`$K0MB8$7$^$9!#0z?t$,J8;zNs$J$i$P!"$=$1$r=q<0J8;zNs$G$"$k$H$_$J$7!"=q<02=$5$1$?F|;~J8;z Ns$rDs6!$9$k$h$&$=$1$r **strftime** $KEO$7$^$9!#

<!$NNc$O;~4V/F|IU%G!<%?$NIA2h$NNc$G$9!#

%U%!%$%k "data" $O0J2<$N$h$&$J9T$+$i$J$k$H$7$^$9:

```
03/21/95 10:00  6.02e23
```

$3$N%U%!%$%k$O0J2<$N$h$&$K$7$FI=<($5$1$^$9:

```
set xdata time
set timefmt "%m/%d/%y"
set xrange ["03/21/95":"03/22/95"]
set format x "%m/%d"
set timefmt "%m/%d/%y %H:%M"
plot "data" using 1:3
```

$3$3$G!"x <4$NL\@9$j$N8+=P$7$O "03/21" $N$h$&$KI=<($5$1$^$9!#

8=:_$N gnuplot $O!";~9o$r%_%jIC@:EY$GDI@W$7!";~9o$N%U%)!<%^%C%H$b$=$1$KH<$C$FJQ99$5$1$F$$$^$9!#Nc: 8=:_$N;~9o$r%_%jIC@:EY$GI=<(

```
print strftime("%H:%M:%.3S %d-%b-%Y",time(0.0))
18:15:04.253 16-Apr-2011
```

0J2<;2>H: **time_specifiers (p. 132)**!#

# Part II

# IA2h%9%?%$%k (plotting styles)

gnuplot $G$O!"$?$/$5$s$NIA2h%9%?%$%k$,MxMQ$G$-$^$9!#$=$l$i$O!"%"%k%U%!%Y%C%H=g$K0J2<$K>R2p$5$l$F$$$^$9!#%3%^%s%I **set style data** $H **set style function** $O!"$=$l0J9_$N **plot** $d **splot** %3%^%s%I$KBP$7$F%G%U%)%k%H$NIA2h%9%?%$%k$rJQ99$7$^$9!#

IA2h%9%?%$%k$O!"%3%^%s%I **plot** $d **splot** $N0lItJ,$H$7$F!"L@<(E*$K%*%W%7%g%s;XDj$9$k$3$H$b$G$-$^$9!#0l$D$NIA2h$NCf$G!"J#?t$NIA2h%9%?%$%k$rAH$_9g$o$;$?$$>l9g$O!"3FMWAG$KBP$7$FIA2h%9%?%$%k$r;XDj$9$kI,MW$,$"$j$^$9!#

Nc:

```
plot 'data' with boxes, sin(x) with lines
```

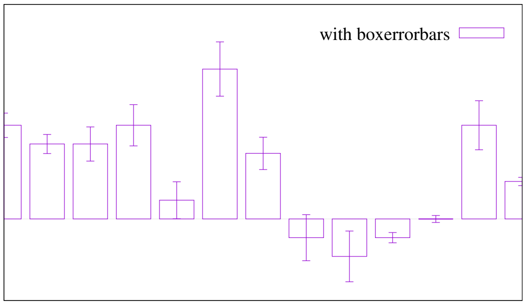
3FIA2h%9%?%$%k$O!"$=$l<+BN$,%G!<%?%U%!%$%k$+$i$N$$$/$D$+$N%G!<%?$NAH$r4|BT$7$^$9!#Nc$($P!"%G%U%)%k%H$G$O **lines** %9%?%$%k$O!"y $NCM$@$1$N1 Ns$N%G!<%? (x $NCM$O0EL[$K=gHV$K<h$i$l$k)!"$^$?$O:G=i$, x, <!$, y $N2 $D$NNs$r4|BT$7$F$$$^$9!#%U%!%$%k$N2?Ns$N%G!<%?$rIA2h%G!<%?$H2r<a$5$;$k$&$^$$J}K!$K4X$9$k>pJs$K$D$$$F$O!"0J2<;2>H: **using (p. 98)**!#

## Boxerrorbars

IA2h%9%?%$%k **boxerrorbars** $O 2 <!85$N%G!<%?IA2h$G$N$_MxMQ2DG=$G$9!#$3$l$O!"3 Ns!"$^$?$O 4 Ns!"$^$?$O 5 Ns$N%G!<%?$,I,MW$G$9!#F~NONs$rDI2C (4,5,6 NsL\) $9$k$H!"$=$l$i$O3F%G!<%?E@Kh$N variable color >pJs (0J2<;2>H: **linecolor (p. 41)**, **rgbcolor variable (p. 42)**) $H$7$F;H$o$l$^$9!#8m:9@~$O!"H"$N6-3&$HF1$8?'$GIA2h$5$l$^$9!#

```
3 Ns:  x  y  ydelta
4 Ns:  x  y  ydelta xdelta       # H"$NI} != -2
4 Ns:  x  y  ylow  yhigh         # H"$NI} == -2
5 Ns:  x  y  ylow  yhigh  xdelta
```

y $N8m:9$, "ydelta" $N7A<0$GM?$($i$l$F!"H"$N2#I}$,$"$i$+$8$a-2.0 $K@_Dj$5$l$F (**set boxwidth -2.0**) $$$J$1$l$P!"H"$N2#I}$O 4 NsL\$NCM$GM?$($i$l$^$9!#y $N8m:9$, "ylow yhigh" $N7A<0$GM?$($i$l$k>l9g$OH"$N2#I}$O 5 NsL\$NCM$GM?$($i$l$^$9!#FCJL$J>l9g$H$7$F!""ylow yhigh" $N8m:97A<0$N 4 Ns$N%G!<%?$KBP$9$k **boxwidth = -2.0** $H$$$&@_Dj$,$"$j$^$9!#$3$N>l9gH"$N2#I}$O!"NY@\$9$kH"$K$/$C$D$/$h$&$K<+F0E*$K7W;;$5$l$^$9!#3 Ns$N%G!<%?$N>l9g$b!"2#I}$O<+F0E*$K7W;;$5$l$^$9!#

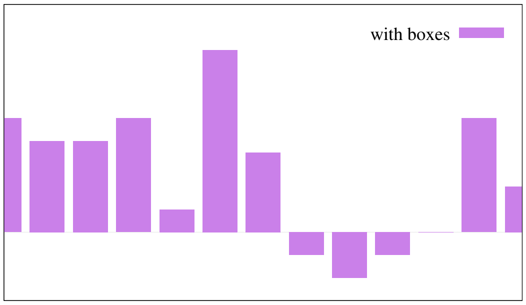



H"$N9b$5$O!"yerrorbars %9%?%$%kF1MM$K y $N8m:9$NCM$+$i7hDj$5$l$^$9!#y-ydelta $+$i y+ydelta $^$G!"$"$k$$$O ylow $+$i yhigh $^$G!"$3$l$i$O2?Ns$N%G!<%?$,M?$($i$l$F$$$k$+$K$h$C$F7h$^$j$^$9!#

## Boxes

**boxes** %9%?%$%k$O 2 <!85IA2h$G$N$_MxMQ2DG=$G$9!#$3$l$OM?$($i$l$? x :BI8$rCf?4$H$7!"x <4$+$i (%0%i%U$N6-3&$+$i!"$G$O$"$j$^$;$s) M?$($i$l$? y :BI8$^$G$NH"$r=q$-$^$9!#$3$l$O4pK\E*$K!"2 Ns!"$^$?$O 3 Ns$N%G!<%?$r;HMQ$7$^$9!#M>J,$JF~NONs$O!"variable 9T$dEI$jDY$7?'$N>pJs$,Ds6!$5$l$?$b$N$H$7$F;HMQ$5$l$^$9 (0J2<;2>H: **rgbcolor variable (p. 42)**)!#

```
2 Ns:  x  y
3 Ns:  x  y  x_width
```



H"$NI }$O3 $D$N$&$A0 1$D$NJ }K !$G7hD j$5$1$^$9! #F~NO%G!<%?$, 3 NsL\$N%G!<%?$r; }$C$F$$$k>19g$O! "$=$1$,H"$NI }$K%;%C%H$5$1$^$9! #$=$&$G$J$/$F**set boxwidth** %3%^%s%I$GH"$NI }$,%;%C%H$5$1$F$$$?>19g$O! "$=$1$,; H$o$1$^$9! #$=$N$I$A$i$G$b$J$$>19g! "H"$NI }$O! "NY@\$9$kH"$,$/$C$D$/$h$&$K<+F 0E*$K7W; ;$5$1$^$9! #

H"$NCf?H$O8=:_$NEI$j$D$V$7%9%?%$%k (fillstyle) $K=>$C$FEI$j$D$V$5$1$^$9! #>\:Y$O! "0J2<; 2>H: **set style fill (p. 172)** ! #?7$7$$EI$j$D$V$7%9%?%$%k$rplot %3%^%s%I>e$G; XD j$9$k$3$H$b$G$-$^$9! #EI$j$D$V$7%9%?%$%k$, **empty** $N>19g$O! "H"$OEI$j$D$V$5$1$^$; $s! #EI$j$D$V$7%9%?%$%k$, **solid** $N>19g$O! "H"$O8=:_$NIA2h?'$G%Y%?EI$j$5$1$^$9$,! "fillstyle %Q%i%a! <%?$rDI2C$9$k$3$H$GEI$j$D$V$7L)EY$r@)8f$G$-$^$9! #0 $OGX7J?'! "1 $OIA2h?'$=$N$b$N$K$J$j$^$9! #EI$j$D$V$7%9%?%$%k$, **pattern** $N>19g$O! "H"$O8=:_$NIA2h?'$G! "$"$k%Q%?!<%s$GEI$j$D$V$7$^$9! #

Nc:

%G!<%?%U%!%$%k$rEI$j$D$V$7$?H"$GIA2h$7! "H"F1; N$r>/$7?bD>J }8~$K%9%Z!<%9$r6u$1$k (K@%0%i%U):

```
set boxwidth 0.9 relative
set style fill solid 1.0
plot 'file.dat' with boxes
```

%Q%?!<%s$G$NEI$j$D$V$7%9%?%$%k$NH"$G sin $H cos $N%0%i%U$rIA2h:

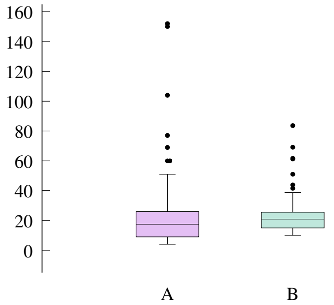
```
set style fill pattern
plot sin(x) with boxes, cos(x) with boxes
```

sin $O%Q%?!<%s 0 $G! "cos $O%Q%?!<%s 1 $GIA2h$5$1$^$9! #DI2C$5$1$kIA2h$O=PNO%I%i%$%P$,%5%]!<%H$9$k%Q%?!<%s$r=[4DE*$K; HMQ$7$^$9! #

$=$1$>$1$N%G!<%?=89g$GL@<(E*$KEI$j$D$V$7%9%?%$%k$r; XD j:

```
plot 'file1' with boxes fs solid 0.25, \
     'file2' with boxes fs solid 0.50, \
     'file3' with boxes fs solid 0.75, \
     'file4' with boxes fill pattern 1, \
     'file5' with boxes fill empty
```

## Boxplot



boxplot $O! "CM$NE }7WE*$JJ,I [$rI=8=$9$k0 1HIE*$JJ }K !$G$9! #; MJ,0L6-3&$O! "1/4 $NE@$,Bh0 1; MJ,0L6-3&0J2<$NCM$r; }$D$h$&$K! "1/2 $NE@$,BhFs; MJ,0L6-3&(%a%8%"%s) 0J2<$NCM$r; }$D$h$&$K! "Ey$H7hD j$5$1$^$9! #Bh0 1; MJ,0L$HBh; 0; MJ,0L$N4V$NNN0h$r0O$`$h$&$KH"$rIA2h$7! "%a%8%"%sCM$N$H$3$m$K$O?eJ ?@~$rIA$-$^$9! #H"$R$2$O! "H"$+$i%f!<%6; XD j8B3&$^$G1oD 9$5$1$^$9! #$=$1$i$N8B3&$N3 0$K$"$kE@$O! "$R$H$D$R$H$DIA2h$5$1$^$9! #

Nc:

```
# x :BI8$O 1.0!"y $O 5 NsL\$NCM$N$H$3$m$K boxplot $rG[CV
plot 'data' using (1.0):5


# >e$HF1$8$@$,!"HO0O3 0$NE@$O1#$7!"boxplot $NI }$r 0.3 $K$9$k
set style boxplot nooutliers
plot 'data' using (1.0):5:(0.3)
```

%G%U%)%k%H$G$O!"using ;XD j$K$h$k 2 NsL\$N y $N$9$Y$F$NCM$KBP$9$k boxplot $r 1 $D$@$1@8@.$7$^$9!#$7$+ $7!"DI2C$N (4 $DL\$N) Ns$r;XD j$9$k$H!"$=$NNs$NCM$r$"$k0x;RJQ?t$NN%;6E*$J%1%Y%kCM$G$"$k$H8+$J$7!"$= $NN%;6CM$N%1%Y%k$NCM$N?t$@$1$N boxplot $rIA2h$7$^$9!#$=$1$i$N boxplot $N4V3V$O%G%U%)%k%H$G$O 1.0 $G$9 $,!"$3$1$O **set style boxplot separation** $GJQ99$G$-$^$9!#%G%U%)%k%H$G$O!"0x;RJQ?t$NCM$O!"3F boxplot $N2<(${^$?$O>e) $NL\@9$j$N%i%Y%k$KI=<($7$^$9!#

Nc

```
# 'data' $N 2 NsL\$O "control" $+ "treatment" $N$$$:$1$+$NJ8;zNs$G
# 0J2<$NNc$O!"$=$N0x;RKh$N 2 $D$N boxplot $r@8@.$9$k
plot 'data' using (1.0):5:(0):2
```

$=$NH"$N%G%U%)%k%H$NI}$O **set boxwidth <width>** $G@_Dj$G$-$^$9$,!"plot %3%^%s%I$N **using** $K$h$k 3 HVL\$N%*%W%7%g%sNs$G$b;XDj$G$-$^$9!#1 HVL\$H 3 HVL\$NNs (x :BI8$HI}) $ODL>o%G!<%?Ns$G$O$J$/Dj?t$H$7$F M?$($^$9!#

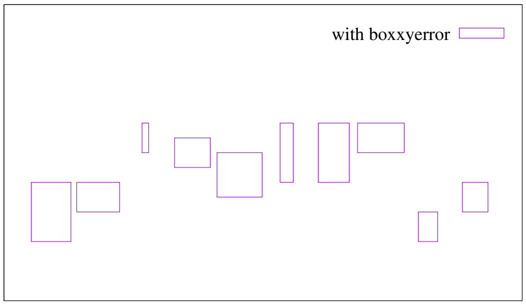
%G%U%)%k%H$G$O!"H"$R$2$OH"$NC<$+$i!"y $NCM$,;MJ,0LHO0O$N 1.5 G\$NCf$K<}$^$C$F$$$F:G$bN%$1$F$$$k$h$& $JE@$^$G1dD9$5$1$^$9!#%G%U%)%k%H$G$O!"HO0O30$NE@ (outlier) $O1_ (pointtype 7) $GIA$+$1$^$9!#H"$R$2$NC< $NK@$NI}$O **set bars** $^$?$O **set errorbars** $r;H$C$F@)8f$G$-$^$9!#

$3$1$i$N%G%U%)%k%H$N@-<A$O **set style boxplot** %3%^%s%I$GJQ99$G$-$^$9!#0J2<;2>H: **set style boxplot (p. 171)**, **bars (p. 128)**, **boxwidth (p. 117)**, **fillstyle (p. 172)**,**candlesticks (p. 55)**!#

# Boxxyerror

**boxxyerror** IA2h%9%?%$%k$O 2 <!85$N%G!<%?IA2h$G$N$_ MxMQ2DG=$G$9!#$3$1$O!"**xyerrorbars** %9%?%$%k$,@~J,$N 8r:9$GI=8=$9$k$H$3$m$rD9J}7A$GI=8=$9$k$3$H$r=|$1$P!" $[$\F1$8$G$9!#$3$1$O!"F~NO%G!<%?$N 4 Ns!"$^$?$O 6 Ns $r;HMQ$7$^$9!#M>J,$JF~NONs$O!"variable 9T$dEI$jDY$7?' $N>pJs$,Ds6!$5$1$?$b$N$H$7$F;HMQ$5$1$^$9 (0J2<;2>H: **rgbcolor variable (p. 42)**)!#

```
4 Ns:  x  y  xdelta  ydelta
6 Ns:  x  y  xlow  xhigh  ylow  yhigh
```



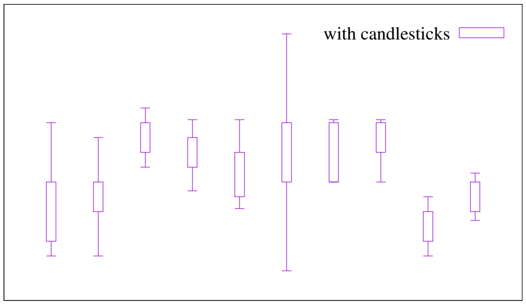
H"$NI}$H9b$5$O **xyerrorbars** %9%?%$%kF1MM x, y $N8m:9$+$i7hDj$5$1$^$9$D$^$j!"xlow $+$i xhigh $^$G$H ylow $+$i yhigh $^$G!"$^$?$O x-xdelta $+$i x+xdelta $^$G$H y-ydelta $+$i y+ydelta $^$G!#$3$1$i$O2?Ns$N %G!<%?$,M?$($i$1$F$$$k$+$K$h$C$F7h$^$j$^$9!#

6 Ns$N7A<0$N%3%^%s%I$O!"G$0U$N x, y $NI}$ND9J}7A$r=q$/4JC1$JJ}K!$rDs6!$7$^$9!#

F~NONs$rDI2C (5,7 NsL\) $9$k$H!"$=$1$i$O3F%G!<%?E@Kh$N variable color >pJs (0J2<;2>H: **linecolor (p. 41)**, **rgbcolor variable (p. 42)**) $G$"$k$H$7$F;H$o$1$^$9!#

H"$NFbIt$O8=:_$NEI$j$D$V$7%9%?%$%k (fillstyle) $K=>$C$FEI$i$1$^$9!#>\:Y$O!"0J2<;2>H: **set style fill (p. 172)**, **boxes (p. 52)**!#plot %3%^%s%I>e$G?7$7$$EI$j$D$V$7%9%?%$%k$r;XDj$9$k$3$H$b$G$-$^$9!#

## Candlesticks



**candlesticks** %9%?%$%k$O!"6bM;%G!<%?$N2 <!85$N%G!<%?IA2h!"$*$h$SE}7W%G!<%?$N$R$2IU$-$NK@%0%i%U$r@8@.$9$k$N$K;H$($^$9!#5-9f$O!"?eJ?J}8~$K$Ox $rCf?4$H$7!"?bD>J}8~$K$O3+;OCM (open) $H=*CM (close) $r6-3&$H$9$kD9J}7A$,;H$o$l$^$9!#$=$7$F!"$=$N x :BI8$N$H$3$m$KD9J}7A$N$F$C$Z$s$+$i:G9bCM (high) $^$G$H!"D9J}7A$ND1$+$i:G0BCM (low) $^$G$N?bD>@~$,0z$+$l$^$9$,!"$3$N?bD>@~$O:G9bCM$H:G0BCM$,F~$lBX$o$C$F$bJQ99$5$l$^$;$s!#

4pK\E*$K5 Ns$N%G!<%?$,I,MW$G$9:

```
6bM;%G!<%?:   date  open  low  high  close
H"$R$2IA2h:   x  box_min  whisker_min  whisker_high  box_high
```

D9J}7A$NI}$O%3%^%s%I **set boxwidth** $G@)8f$G$-$^$9$,!"0JA0$N gnuplot $X$N8eJ}8_49@-$H$7$F!"boxwidth %Q%i%a!<%?$,@_Dj$5$l$F$$$J$$>l9g$O**set errorbars <width>** $G@)8f$5$l$k$h$&$K$J$C$F$$$^$9!#

$3$l$NBe$o$j$K!"H"$R$2 (box-and-whisker) $N%0%k!<%W2=$K4X$9$kL@<(E*$JI}$N;XDj$r!"D12C$N6 HVL\$N%G!<%?$G;XDj$G$-$^$9!#$=$NI}$O!"x :BI8$HF1$8C10L$GM?$($J$1$l$P$$$1$^$;$s!#

F~NONs$rDI2C (6 NsL\!"$^$?$O6 NsL\$,%G!<%?$NI}$H$7$F;H$l$k>l9g$O7 NsL\) $9$k$H!"$=$l$i$O3F%G!<%?E@Kh$N variable color >pJs (0J2<; 2>H: **linecolor (p. 41)**, **rgbcolor variable (p. 42)**) $H$7$F;H$o$l$^$9!#

%G%U%)%k%H$G$O!"1tD>@~J,$N$F$C$Z$s$HD1$K$O?bD>$K8r$o$k?eJ?@~$O0z$+$l$^$;$s!#$=$l$r0z$-$?$$>l9g!"Nc$($PE57?E*$JNc$OH"$R$2?^ (box-and-whisker plot) $G$N;HMQ$G$9$,!"IA2h%3%^%s%I$K%-!<%o!<%I **whiskerbars** $rDI2C$7$F$/$@$5$$!#%G%U%)%k%H$G$O!"?eJ?@~$OH" (candlestick) $N?eJ?I}0lGU$K0z$+$l$^$9$,!"$=$l$OA4BN$NI}$KBP$9$k3d9g$r;XDj$9$k$3$H$GJQ99$G$-$^$9!#

6bM;%G!<%?$NDL>o$N4?=,$G$O!"(3+;OCM) < (=*CM) $N>l9g$OD9J}7A$O6u$G!"(=*CM) < (3+;OCM) $N>l9g$OEI$jDY$5$l$^$9!#8=:_$N fillstyle $K "empty" $r%;%C%H$7$F$$$k>l9g$O!"<B:]$K$3$&$J$j$^$9!#0J2<; 2>H: **fillstyle (p. 172)**!#fillstyle $KEI$jDY$7!"$^$?$O%Q%?!<%s$r%;%C%H$7$F$$$k>l9g$O!"3+;OCM!"=*CM$K4X78$J$/!"$9$Y$F$NH"$K$=$l$,;H$o$l$^$9!#0J2<; 2>H: **set errorbars (p. 128)**,**financebars (p. 58)**!#$^$?!"0J2<$b;2>H$7$F$/$@$5$$!#candlestick

$Hfinance

$N%G%b!#

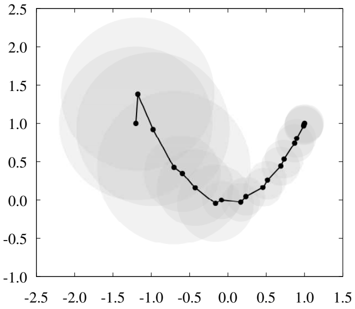
Cm0U: Cf1{CM$rI=$9$?$a$N5-9f$J$I$rDI2C$7$?$$>l9g!"0J2<$NNc$N$h$&$K!"$R$2IU$-$NK@%0%i%U$KB>$NIA2h%3%^%s%I$rDI2C$9$kI,MW$,$"$j$^$9:

```
# %G!<%?Ns:  X ':G>.CM' '1/4 0L$NCM' 'Cf1{CM' '3/4 0L$NCM' ':GBgCM'
set errorbars 4.0
set style fill empty
plot 'stat.dat' using 1:3:2:6:5 with candlesticks title 'Quartiles', \
     ''         using 1:4:4:4:4 with candlesticks lt -1 notitle

# $R$2$N>e$K?eJ?@~$rH<$&IA2h$G!"?eJ?@~$NI}$rA4BNI}$N 50% $K$9$k
plot 'stat.dat' using 1:3:2:6:5 with candlesticks whiskerbars 0.5
```

0J2<; 2>H: **set boxwidth (p. 117)**, **set errorbars (p. 128)**, **set style fill (p. 172)**, **boxplot (p. 53)**!#

## Circles



%9%?%$%k **circles** $O!"3F%G!<%?E@$KL@<($5$l$?H>7B$N1_$rIA2h$7$^$9!#3 Ns$N%G!<%?$rM?$($?>l9g$O!"$=$l$r x, y, H>7B$H2r<a$7$^$9!#H>7B$O!">o$KIA2h$N?eJ?<4 (x $^$?$O x2) $NC10L$G2r<a$5$l$^$9!#y J}8~$N=L<\$HIA2h$N%"%9%Z%/%HHf$O!"$$$:$l$bL5;k$5$l$^$9!#2 Ns$N%G!<%?$7$+M?$($J$$$H!"H>7B$O **set style circle** $+$i<h$j$^$9!#$3$N>l9g!"H>7B$O graph $+ screen $N:BI87O$GM?$($k$3$H$,$G$-$^$9!#

%G%U%)%k%H$G$O40A4$J1_$rIA2h$7$^$9$,!"4 NsL\!"5 NsL\$K3+;O3Q!"=*N;3Q$r;XDj$9$k$3$H$G@p7A$rIA2h$9$k$3$H$b$G$-$^$9!#4 NsL\!"$"$k$$$O 6 NsL\$N%G!<%?$rDI2C$7$FItJ,1_$N?'$r;XDj$9$k$3$H$b$G$-$^$9!#@p7A$N3+;O3Q!"=*N;3Q$NC10L$OEY$G;XDj$9$kI,MW$,$"$j$^$9!#0J2<;2>H: **set style circle (p. 175)**,**set style fill (p. 172)**!#

Nc:

```
# LI@Q$, 3 NsL\$NCM$KHfNc$9$k$h$&$J1_$rIA2h
set style fill transparent solid 0.2 noborder
plot 'data' using 1:2:(sqrt($3)) with circles, \
     'data' using 1:2 with linespoints

# 1_$NBe$o$j$K%Q%C%/%^%s$rIA2h
plot 'data' using 1:2:(10):(40):(320) with circles

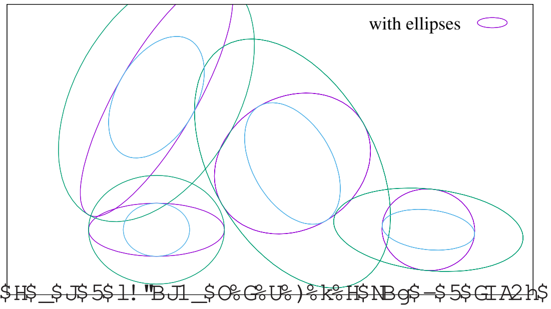
# %$%s%i%s%G!<%?$G1_%0%i%U$rIA2h
set xrange [-15:15]
set style fill transparent solid 0.9 noborder
plot '-' using 1:2:3:4:5:6 with circles lc var
0    0    5    0    30    1
0    0    5   30    70    2
0    0    5   70   120    3
0    0    5  120   230    4
0    0    5  230   360    5
e
```

$3$l$O!"pointstyle 7 $GE@$N%5%$%:$r variable $H$7$? **points** $K$h$kIA2h$H;w$F$$$^$9$,!"circles $O x <4$NHO0O$G?-=L$5$l$kE@$,0[$J$j$^$9!#0J2<$b;2>H: **set object circle (p. 155)**, **fillstyle (p. 172)**!#

## Ellipses

%9%?%$%k **ellipses** $O!"3F%G!<%?E@$KBJ1_(ellipse) $rIA2h$7$^$9!#$3$N%9%?%$%k$O!"2 <!85IA2h$K$N$_E,MQ$5$l$^$9!#3FBJ1_$O!"Cf?4!"<g<4D>7B!"I{<4D>7B!"x <4$H<g<4$N$J$93Q!"$GI=8=$5$l$^$9!#

```
2 Ns: x y
3 Ns: x y major_diam
4 Ns: x y major_diam minor_diam
5 Ns: x y major_diam minor_diam angle
```



2 Ns$N%G!<%?$N$_$,M?$($i$l$?>l9g$O!"$=$l$i$OCf?4$N:BI8$H$_$J$5$l!"BJ1_$O%G%U%)%k%H$NBg$-$5$GIA2h$5$l$^$9 (0J2<;2>H: **set style ellipse (p. 176)**)!#BJ1_$N8~$-$O!"<g<4$H x <4$N$J$93Q$GDj5A$5$l$^$9$,!"$=$l$b%G%U%)%k%H$N ellipse $N%9%?%$%k$+$i<h$i$l$^$9 (0J2<;2>H: **set style ellipse (p. 176)**)!#3 Ns$N%G!<%?$,M?$($i$l$?>l9g$O!"3 NsL\$O<g!"I{N><4$ND>7B (I}) $H$7$F;H$o$l$^$9!#8~$-$O%G%U%)%k%H$G 0 $K$J$j$^$9!#4 Ns$N%G!<%?$,M?$($i$l$?>l9g$O!"$=$l$i$OCf?4$N:BI8!"<g<4D>7B (I})!"I{<4D>7B$H$7$F;H$o$o$l$^$9!#$3$l$i$OD>7B$G$"$j!"H>7B$G$J$$$3$H$KCm0U$7$F$/$@$5$$!#5 Ns$N%G!<%?$,M?$($i$l$?>l9g$O!"5 NsL\$NCM$OEYC1

0L$N8~$-$N3QEY$N;XDj$H$7$F;H$o$l$^$9!#BJ1_$O!"3,4,5 Ns$NCM$OIi$NCM$H$7$F;XDj$9$k$3$H$G!"$=$l$i$N%G%U%)%k%H$NCM$rMxMQ$7$FBJ1_$r=q$+$;$k$3$H$b$G$-$^$9!#

>e$N$9$Y$F$N>l9g$G!"variable color %G!<%?$r:G8e$NNs (3,4,5,6 NsL\) $H$7$FDI2C$G$-$^$9!#>\:Y$O0J2<;2>H: **colorspec (p. 41)**!#

%G%U%)%k%H$G$O!"<g<4D>7B$O?eJ?<4 (x $^$?$O x2) $NC10L!"I{<4D>7B$O?bD><4 (y $^$?$O y2) $NC10L$G$"$k$H$_$J$5$l$^$9!#$3$l$O!"x <4$H y <4$N=L<\$,0[$J$k>l9g!"<g<4$HI{<4$NHf$O2sE>8e$K$O@5$7$/$O$J$i$J$$!"$H$$$&$3$H$r0UL#$7$F$$$^$9!#$7$+$7$3$N5sF0$O!"%-!<%o!<%I **units** $GJQ99$G$-$^$9!#

$3$l$K4X$7$F$O!"3 <oN`$NBeMQIJ$,$"$j$^$9: **units xy** $,IA2h;XDj$K4^$^$l$F$$$k>l9g!"$=$N<4$O>e$K=R$Y$?$h$&$K=L<\$5$l$^$9!#**units xx** $H$9$k$H!"D>7B$ON><4$H$b x <4$NC10L$G7W;;$5$l!"**units yy** $ON><4$H$b y <4$NC10L$G7W;;$5$l$^$9!#8e$N 2 $D$O!"IA2h$N%5%$%:$rJQ99$7$F$b!"BJ1_$O@5$7$$%"%9%Z%/%HHf$r;}$A$^$9!#

**units** $r>JN,$7$?>l9g$O!"%G%U%)%k%H$N@_Dj$,;HMQ$5$l!"**units xy** $H$J$j$^$9$,!"$3$l$O!"**set style ellipse** $G:FDj5A2DG=$G$9!#

Nc (BJ1_$rM-8z$J@~<o$r<~4|E*$K;HMQ$7$FIA2h):

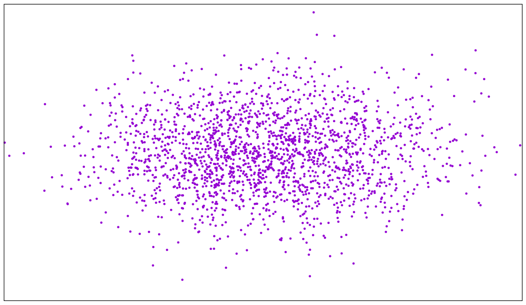
```
plot 'data' using 1:2:3:4:(0):0 with ellipses
```

0J2<$b;2>H: **set object ellipse (p. 154)**, **set style ellipse (p. 176)**, **fillstyle (p. 172)**!#

# Dots

**dots** %9%?%$%k$O3FE@$K>.$5$J%I%C%H$rIA2h$7$^$9!#$3$l$O$?$/$5$s$NE@$+$i$J$k;6I[?^$NIA2h$KJXMx$G$7$g$&!#2 <!85IA2h$G$O 1 Ns!"$^$?$O 2 Ns$NF~NO%G!<%?$,!"3 <!85IA2h$G$O 3 Ns$N%G!<%?$,I,MW$G$9!#

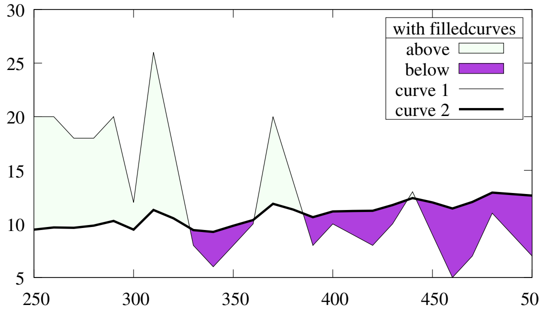
=PNO7A<0$K$h$C$F$O (post, pdf $J$I)!"%I%C%H$NBg$-$5$O linewidth $rJQ99$9$k$3$H$G@)8f$G$-$k$3$H$b$"$j$^$9!#



```
1 Ns:  y        # x $O9THV9f
2 Ns:  x  y
3 Ns:  x  y  z  # 3D $N$_ (splot)
```

# Filledcurves

%9%?%$%k **filledcurves** $O 2 <!85IA2h$G$N$_MxMQ$7$^$9!#$3$l$O 3 <oN`$NO[$J$k;XDj$,2DG=$G$9!#:G=i$N 2 <oN`$O 1 $D$N4X?tIA2h!"$"$k$$$O (x,y) 2 Ns$NF~NO%G!<%?MQ$N$b$N$G!"8e$G>R2p$9$k$h$&$K%*%W%7%g%s$G99$J$k;XDj$,$G$-$^$9!#



=q<0:

```
plot ... with filledcurves [option]
```

$3$3$G!"%*%W%7%g%s$O0J2<$N$&$A$N$$:$l$+$G$9:

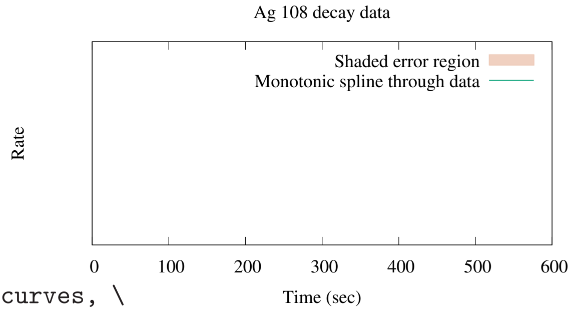
```
[closed | {above | below}
{x1 | x2 | y | r}[=<a>] | xy=<x>,<y>]
```

:G=i$N$b$N$O **closed** $G!"$3$l$O6J@~$=$l<+?H$rJDB?3Q7A$H8+$J$7$^$9!#F~NO%G!<%?$,2 Ns$N>l9g$K$O$3$l$,%G%U%)%k%H$G$9!#

2 <oN`L\$O;XDj$5$l$?<4!"$"$k$$$O?eJ?@~!"?bD>@~!"M?$($i$l$?E@$J$I$H!"6J@~$H$N4V$K:n$i$l$kNN0h$rEI$j$D$V$7$^$9!#

```
filledcurves closed   ... CzEYJD6J@~$G0O$^$l$kNN0h
filledcurves x1       ... x1 <4
filledcurves x2       ... x2 <4 (y1, y2 <4$bF1MM)
filledcurves y=42     ... D>@~ y=42, $9$J$o$A x <4$HJ?9T
filledcurves xy=10,20 ... x1,y1 <4$G$NE@ 10,20 (@p7?$N$h$&$J7A>u)
filledcurves above r=1.5  6K:BI8$G$NF07B<4$N 1.5 $N30B&$NNN0h
```

3 <oN'L\$O!"x :BI8$N=89g$,F1$8$G$"$k2 $D$N6J@~$N4V$N NN0h$rEI$jDY$7$^$9!#$3$1$O!"(x, y1, y2) $N3 Ns$NF~NO %G!<%?$,I,MW$G$9!#F~NO%G!<%?$, 3 Ns0J>e$N>l9g$K$O$3 $1$,%G%U%)%k%H$G$9!#2 NsL\$, y $NCM$G!"3 NsL\$,$=$N8m :9%G!<%?$G$"$k>l9g$O!"I T3ND jNN0h$r1"1F$GI=8=$9$k$3$H $,$G$-$^$9!#$3$1$K;w$? 3 <!85IA2h%9%?%$%k **zerrorfill** $b;2>H$7$F$/$@$5$$!#




```
 3 Ns:  x  y  yerror
```

```
plot $DAT using 1:($2-$3):($2+$3) with filledcurves, \
     $DAT using 1:2 smooth mcs with lines
```

**above** $H **below** %*%W%7%g%s$O

```
... filledcurves above {x1|x2|y|r}=<val>
```

$*$h$S

```
... using 1:2:3 with filledcurves below
```

$N7A$N%3%^%s%I$KE,MQ2DG=$G$9!#$I$A$i$N>l9g$G$b!"$3$1$i$N%*%W%7%g%s$OEI$j$D$V$7NN0h$r!"6-3&@~!"$^$? $O6-3&6J@~$NJRB&$K@)8B$7$^$9!#

Cm0U: $3$NIA2h%b!<%I$OA4$F$N=PNO7A<0$G%5%]!<%H$5$l$k$H$O8B$j$^$;$s!#

```
  3 Ns$N%G!<%?IA2h$G$O!"x= $H y= $N%-!<%o!<%I$OL5;k$7$^$9!#
```

%G!<%?%U%!%$%k$+$iIA$+$l$?6J@~$NEI$j$D$V$7$r3HBg$9$k$H!"2?$b$J$/$J$C$?$j@5$7$/$J$$NN0h$K$J$k$3$H$, $"$j$^$9$,!"$=$l$O gnuplot $,!"NN0h$G$O$J$/E@$d@~$r%/%j%C%T%s%0$7$F$$$k$+$i$G$9!#

<x>, <y>, <a> $,IA2hNN0h$N30$K$"$k>l9g!"$=$l$i$O%0%i%U$N6-3&$X0\F0$5$l$^$9!#$h$C$F!"%*%W%7%g%s xy=<x>,<y> $r;XDj$7$?>l9g$N<B:]$NEI$j$D$V$7NN0h$O!"xrange $d yrange $K0MB8$7$^$9!#

## EI$jDY$7$NB0@- (fill properties)

**with filledcurves** $G$NIA2h$O!"fillstyle (solid/transparent/pattern) $d fillcolor $r;XDj$9$k$3$H$G$5$i$K%+ %9%?%^%$%:$G$-$^$9!#plot %3%^%s%I$G fillstyle (**fs**) $r;XDj$7$J$1$l$P!"8=:_$N%G%U%)%k%H$N fill %9%?%$%k$r;H MQ$7$^$9!#0J2<;2>H: **set style fill (p. 172)**!#plot %3%^%s%I$G fillcolor (**fc**) $r;XDj$7$J$1$l$P!"DL>o$N@~<o (linetype) $N?'Ns$K=>$$$^$9!#

fillstyle $NB0@-$N {{no}border} $O!"filledcurves $N%b!<%I$,%G%U%)%k%H$N **closed** $G$"$k>l9g$K<u$1IU$1$^ $9!#Nc:

```
 plot 'data' with filledcurves fc "cyan" fs solid 0.5 border lc "blue"
```

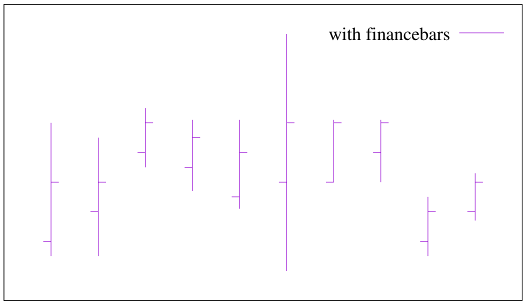
# Financebars

**financebars** %9%?%$%k$O6bM;%G!<%?$N2 <!85$N%G!<%?IA2h$G$N$_MxMQ2DG=$G$9!#$3$1$O!"x :BI8 1 $D (DL>oF| IU) $H!"4 $D$N y :BI8 (6b3[) $rI,MW$H$7$^$9!#

```
 5 Ns:   date  open  low  high  close
```

F~NONs$rDI2C(6 NsL\) $9$k$H!"$=$l$i$O3F9TKh$N variable color >pJs (0J2<;2>H: **linecolor (p. 41)**, **rgbcolor variable (p. 42)**) $H$7$F;H$o$l$^$9!#

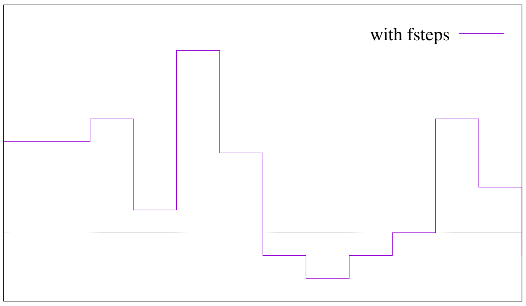
5-9f$O!"?eJ?J}8~$K$O$=$Nx :BI8$KCV$+$l!"?bD>J}8~$K$O:G9bCM (high) $H:G0BCM (low) $rC<$H$9$k@~J,$,;H$o$l$^$9!#$=$7$F!"$=$N@~J,$K?eJ?:8B&$N9o$_$,3+;OCM (open) $N=j$K!"?eJ?1&B&$N9o$_$,=*$jCM (close) $N=j$K$D$-$^$9!#$=$N9o$_$ND9$5$O **set errorbars** $GJQ99$G$-$^$9!#5-9f$O:G9bCM$H:G0BCM$,F~$lBX$o$C$F$bJQ$o$j$^$;$s!#0J2<;2>H: **set errorbars (p. 128)**,**candlesticks (p. 55)**!#0J2<$b;2>H$7$F$/$@$5$$!#6bM;%G!<%?%G%b!#




## Fsteps

**fsteps** %9%?%$%k$O2 <!85IA2h$G$N$_MxMQ2DG=$G$9!#$3$l$O 2 K\$N@~J,$GNY$j9g$&E@$r$D$J$.$^$9: 1 K\L\$O (x1,y1) $+$i (x1,y2) $^$G!"2 K\L\$O (x1,y2) $+$i (x2,y2) $^$G!#F~NONs$N>r7o$O!"**lines** $d **points** $KBP$9$k$b$N$HF1$8$G$9!#**fsteps** $H **steps** $N0c$$$O!"**fsteps** $O!"@^$l@~$r@h$K y J}8~$K=q$$$F$+$i<!$K x J}8~$K=q$/$N$KBP$7!"**steps** $O@h$K x J}8~$K=q$$$F$+$i<!$K y J}8~$K=q$-$^$9!#

0J2<$b;2>H`steps` %G%b!#

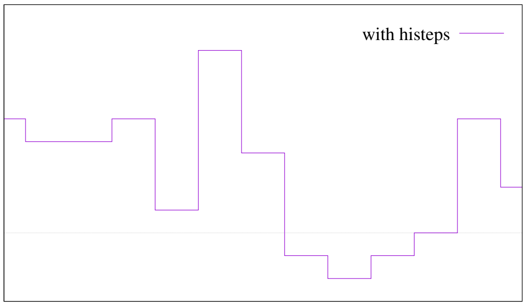


## Fillsteps

**fillsteps** %9%?%$%k$O!"**steps** $H[$\F1$8$G$9$,!"6J@~$H y=0 $H$N4V$NNN0h$r8=:_$N fillstyle $GEI$jDY$7$^$9!#0J2<;2>H: **steps (p. 66)**!#

## Histeps

**histeps** %9%?%$%k$O 2 <!85IA2h$G$N$_MxMQ2DG=$G$9!#$3$l$O%R%9%H%0%i%`$NIA2h$G$NMxMQ$r0U?^$7$F$$$^$9!#y $NCM$O!"x $NCM$rCf?4$KCV$/$H9M$(!"x1 $G$NE@$O ((x0+x1)/2,y1) $+$i ((x1+x2)/2,y1) $^$G$N?eJ?@~$H$7$FI=8=$5$l$^$9!#C<$NE@$G$O!"$=$N@~$O$=$Nx :BI8$,Cf?4$K$J$k$h$&$K1dD9$5$l$^$9!#NY$j9g$&E@F1;N$N?eJ?@~$NC<$O!"$=$NN><T$NJ?6QCM$N$H$3$m$G$N1tD>@~!"$9$J$o$A ((x1+x2)/2,y1) $+$i ((x1+x2)/2,y2) $N@~J,$G7k$P$l$^$9!#F~NONs$N>r7o$O!"**lines** $d **points** $KBP$9$k$b$N$HF1$8$G$9!#




**autoscale** $,M-8z$G$"$k>l9g!"x $NHO0O$O!"$=$N1dD9$5$l$??eJ?@~$NHO0O$G$O$J$/!"%G!<%?E@$NHO0O$,A*Br$5$l$^$9!#$h$C$F!"C<$NE@$K4X$7$F$O$=$N?eJ?@~$OH>J,$7$+IA$+$l$J$$$3$H$K$J$j$^$9!#0J2<$b;2>H`steps` %G%b!#

## Histograms

%9%?%$%k **histograms** $O2 <!85IA2h$G$N$_M-8z$G$9!#$3$l$O!"%G!<%?$N3FNs$NJB$S$+$iJ?9T$JK@%0%i%U$r:n$j$^$9!#**plot** %3%^%s%I$N3FMWAG$O!"$=$l$K4X$9$kL\@9$j$NCM$dK^Nc (key) $N%?%$%H%k$,IUB0$9$k$+$bCN$l$^$;$s$,!"C10l$NF~NO%G!<%?r;XDj$9$kI,MW$,$"$j$^$9 (Nc$ ($PF~NO%U%!%$%k$N 1 $D$NNs)!#8=:_$O!"4 <oN`$N%R%9%H%0%i%`7A<0$N%9%?%$%k$r%5%]!<%H$7$F$$$^$9!#

```
set style histogram clustered {gap <gapsize>}
set style histogram errorbars {gap <gapsize>} {<linewidth>}
set style histogram rowstacked
set style histogram columnstacked
set style histogram {title font "name,size" tc <colorspec>}
```

%G%U%)%k%H$N%9%?%$%k$O **set style histogram clustered gap 2** $KBP1~$7$F$$$^$9!#$3$N%9%?%$%k$G$O!"JB Ns$K;XDj$5$l$?%G!<%?$NCM$N=89g$O!"A*Br$5$l$?%G!<%?Ns$N$=$N$=$l$>$l$N=xNs (9THV9f) $KBP1~$9$k x :BI8 $N>l=j$K!"3F!9H"$N%0%k!<%W$H$7$F8G$a$i$l$FCV$+$l$^$9!#$h$C$F!"<n> 8D$N%G!<%?Ns$rJBNs$K;XDj$7$?>l 9g!":G=i$N8G$^$j$O x=1 $rCf?4$H$9$k <n> 8D$NH"$N8G$^$j$+$i$J$j!"$=$N3F!9$N9b$5$O!"$=$N <n> %G!<%? Ns3F!9$N:G=i (1 9TL\) $NCM$,<h$i$l$^$9!#$=$N8e$K>/$76uGr (gap) $,6u$1$i$l!"<!$K3F%G!<%?Ns$N<! (2 9TL\) $NCM$KBP1~$9$kH"$N8G$^$j$, x=2 $rCf?4$H$7$FCV$+$l$^$9!#0J2<F1MM$G$9!#%G%U%)%k%H$N6uGr (gap) I}$N 2 $O!"H"$N8G$^$jF1;N$N4V$N6uGr$,!"H" 2 $D$NI}$KEy$7$$$3$H$r0UL#$7$^$9!#F1$8Ns$KBP$9$kH"$OA4$FF1$8?'$^ $?$OF1$8%Q%?!<%s$GM?$($i$l$^$9 (0J2<; 2>H: **set style fill (p. 172)**)!#

H"$N8G$^$j$=$l$>$l$O!"%G!<%?%U%!%$%k$N 1 $D$N9T$+$iF@$i$l$^$9!#$=$N$h$&$JF~NO%U%!%$%k$N3F9T$N:G=i$N 9`L\$,8+=P$7 (%i%Y%k) $G$k$3$H$ONI$/$"$k$3$H$G$9!#$=$NNs$K$"$k8+=P$7 (%i%Y%k) $O!"**using** $K **xticlabels** %*%W%7%g%s$r$D$1$k$3$H$G!"$=$l$KBP1~$9$kH"$N8G$^$j$N??2<$N x <4$K1h$C$?$H$3$m$KCV$/$3$H$,$G$-$^$9!#

**errorbars** %9%?%$%k $O!"3F% (%s%H%j$KBP$7$FDI2C$NF~NONs$rI,MW$H$9$k0J30$O **clustered** %9%?%$%k$K$H$F$b NI$/;w$F$$$^$9!#:G=i$NNs$O!"**clustered** %9%?%$%k$N>l9g$HA4$/F1MM$KH"$N9b$5 (y $NCM) $H$7$FJ];}$5$l$^$9!#

```
2 Ns:        y yerr          # @~$O y-yerr $+$i y+err $X?-$S$k
3 Ns:        y ymin ymax     # @~$O ymin $+$i ymax $X?-$S$k
```

8m:9@~$N8+$?L\$O!"8=:_$N **set errorbars** $NCM$H <linewidth> %*%W%7%g%s;XDj$G@)8f$G$-$^$9!#

@Q$_>e$27?$N%R%9%H%0%i%`$b 2 $D$N7A<0$,%5%]!<%H$5$l$F$$$^$9!#$=$l$i$O%3%^%s%I **set style histogram {rowstacked|columnstacked}** $GA*Br$G$-$^$9!#$3$l$i$N%9%?%$%k$K$*$$$F!"A*Br$5$l$?Ns$N%G!<%?$NCM$O @Q$_>e$2$i$l$?H"$H$7$F=8$a$i$l$^$9!#@5$NCM$O!"y=0 $+$i>e$NJ}$X@Q$_>e$2$i$l!"Ii$NCM$O2<$X8~$+$C$F@Q $_>e$2$i$l$^$9!#@5$NCM$HIi$NCM$,:.$8$C$F$$$>l9g$O!">e8~$-$H2<8~$-$NN>J}$N@Q$_>e$2$,@8@.$5$l$^$9!#%G %U%)%k%H$N@Q$_>e$2%b!<%I$O **rowstacked** $G$9!#

%9%?%$%k **rowstacked** $O!"$^$::G=i$KA*Br$5$l$?Ns$N3F9T$NCM$r x <4$N$=$l$>$l$N0LCV$KG[CV$7$^$9: 1 9TL\ $NCM$O x=1 $NH"!"2 9TL\$N$O x=2!"0J2<F1MM$H$J$j$^$9!#2 HVL\0J9_$KA*Br$5$l$?Ns$KBP1~$9$kH"$O!"$=$l $i$N>e$K@Q$_=E$M$i$l$F9T$-$^$9!#$=$7$F7k2L$H$7$F!"x=1 $K$G$-$kH"$N@Q$_=E$M$O!"3FNs$N:G=i$NCM (1 9T L\$NCM) $+$i$J$j!"x=2 $NH"$N@Q$_=E$M$O3FNs$N 2 9TL\$NCM!"$J$I$N$h$&$K$J$j$^$9!#F1$8Ns$KBP$9$kH"$OA4 $FF1$8?'$^$?$OF1$8%Q%?!<%s$GM?$($i$l$^$9 (0J2<; 2>H: **set style fill (p. 172)**)!#

%9%?%$%k **columnstacked** $bF1MM$G$9$,!"$3$A$i$O3FH"$N@Q$_>e$2$O (3F9T$N%G!<%?$+$i$G$O$J$/) 3FNs$N%G!<%?$+$i$J$j$^$9!#:G=i$K;XDj$5$l$?Ns$N3F9T$N%G!<%?$, x=1 $NH"$N@Q$_>e$2$r@8@.$7!"2 HVL\$K;XDj$7$?Ns$N 3F9T$N%G!<%?$, x=2 $NH"$N@Q$_>e$2!"$J$I$N$h$&$K$J$j$^$9!#$3$N%9%?%$%k$G$O!"3FH"$N?'$O!"3F%G!<%?9`L\ $N (NsHV9f$G$O$J$/) 9THV9f$+$i7hDj$5$l$^$9!#

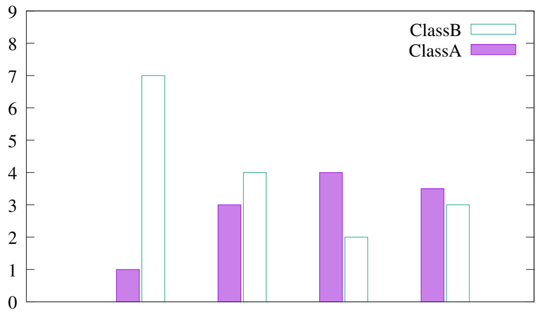
H"$NI}$O%3%^%s%I **set boxwidth** $GJQ99$G$-$^$9!#H"$NEI$j$D$V$7%9%?%$%k$O%3%^%s%I **set style fill** $G@_Dj $G$-$^$9!#

histograms $O x <4$O>o$K x1 <4$r;H$$$^$9$,!"y <4$K4X$7$F$O y1 <4$+ y2 <4$+$rA*Br$G$-$^$9!#plot L?Na$,!" histograms $HB>$N%9%?%$%k$NI A2h$NN>J}$r4^$`>l9g!"histogram $G$J$$J}$O!"x1 <4$r;H$&$+ x2 <4$r;H$&$+$r A*Br$G$-$^$9!#

Nc:

F~NO%U%!%$%k$O!"2, 4, 6, ... $NNs$K%G!<%?CM$r;}$A!"3, 5, 7, ... $NNs$K8m:9I>2A$r;}$D$H$7$^$9!#0J2<$NNc$O!"2 NsL\!"4 NsL\$NCM$rH"$N8G$^$j7?(clustered; %G%U%)%k%H %9%?%$%k) $N%R%9%H%0%i%`$H$7$FIA2h$7$^$9!#$3$3$G$O!" plot %3%^%s%I$G7+$jJV$7 (iteration) $r;HMQ$7$F$$$^$9$N $G!"G$0U$N8D?t$N%G!<%?Ns$r0l$D$N%3%^%s%I$G=hM}$G$- $^$9!#0J2<; 2>H: **plot for (p. 104)**!#

```
set boxwidth 0.9 relative
set style data histograms
set style histogram cluster
set style fill solid 1.0 border lt -1
plot for [COL=2:4:2] 'file.dat' using COL
```

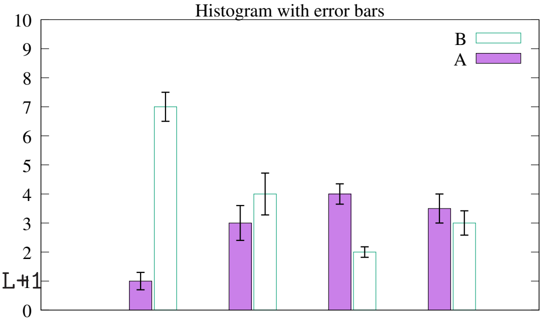


$3$1$O!"x <4>e$N3F@0?tCM$rCf?4$H$9$k$=$1$>$1 2 $D$NH"(1tD>$JK@) Kh$N8G$^$j$K$h$kIA2h$r@8@.$7$^$9!#F~NO%U%!%$%k$N:G=i$NNs$K%i%Y%k$,4^$^$1$F$$$k$J$i$=$1$r!"0J2<$N>/$7JQ99$7$?%3%^%s%I$G x <4$K1h$C$FG[CV$G$-$^$9!#

```
plot for [COL=2:4:2] 'file.dat' using COL:xticlabels(1)
```

%U%!%$%k$,!"3F%G!<%?$NB,DjCM$HHO0O$N>pJs$NN>J}$r4^$s$G$$$k>l9g!"IA2h$K8m:9@~$rDI2C$9$k$3$H$,$G$-$^$9!#0J2<$N%3%^%s%I$O8m:9@~$r(y-<error>) $+$i (y+<error>) $K0z$-!"$=$NF,$KH"$HF1$8I}$N?eJ?@~$r$D$1$^$9!#8m:9@~$H8m:9@~$NC<$N@~$O!"9u$G@~I} 2 $GIA2h$5$1$^$9!#

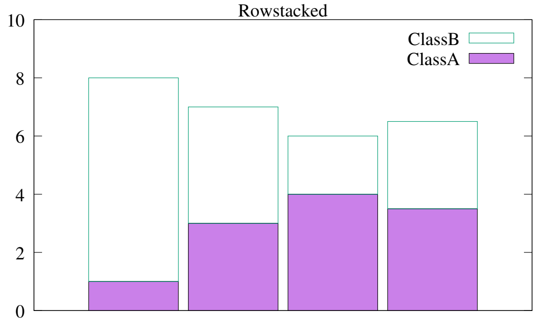
```
set errorbars fullwidth
set style fill solid 1 border lt -1
set style histogram errorbars gap 2 lw 2
plot for [COL=2:4:2] 'file.dat' using COL:COL+1
```



0J2<$O!"F1$8%G!<%?$r9TKh$N@Q$_>e$27?(rowstacked) $N%R%9%H%0%i%`$GIA2h$9$kJ}K!$r<($7$F$$$^$9!#$3$1$^$G$H$O0c$$$!"0J2<$NNc$G$O7+$jJV$7$r;H$&$N$G$J$/!"L@<(E*$KJL!9$NNs$r;XDj$7$^$9!#

```
set style histogram rowstacked
plot 'file.dat' using 2, '' using 4:xtic(1)
```

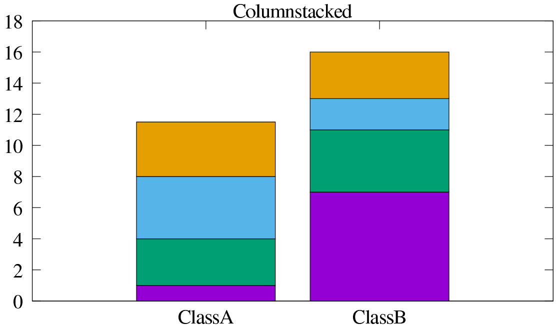
$3$1$O!"0l$D0l$D$N1tD>$JK@$,!"%G!<%?$N0l$D$NNs$KBP1~$9$kIA2h$r@8@.$7$^$9!#3FK@$O!"2 $D$NItJ,$N@Q$_>e$2$N7A$G$"$j!"$=$1$>$1$NItJ,$N9b$5$,!"%G!<%?%U%!%$%k$N2 NsL\$H4 NsL\$NCM$KBP1~$7$^$9!#



:G8e$K0J2<$N%3%^%s%I

```
set style histogram columnstacked
plot 'file.dat' using 2, '' using 4
```

$O!"0l$D0l$D$,$=$1$>$1%G!<%?Ns$KBP1~$9$k!"2 $D$N1tD>$J@Q$_=E$M$NK@$r@8@.$7$^$9!#x=1 $K$"$kK@$O!"%G!<%?%U%!%$%k$N2 NsL\$N3F9T$NCM$KBP1~$9$kH"$+$i$J$j$^$9!#x=2 $K$"$kK@$O!"%G!<%?%U%!%$%k$N4 NsL\$N3F9T$NCM$KBP1~$9$kH"$+$i$J$j$^$9!#



$3$1$O!"gnuplot $NDL>o$NF~NO$N=D!"2#$N2r<a$rF~$14 9$($k$3$H$K$J$j$^$9$N$G!"K^Nc$N%?%$%H%k$dx <4$NL\@9$j$N8+=P$7$N;XDj$bJQ99$9$kI,MW$,$"$j$^$9!#0J2<$N%3%a%s%HItJ,$r;2>H$7$F$/$@$5$$!#

```
set style histogram columnstacked
plot '' u 5:key(1)            # 1 NsL\$rK^Nc%?%$%H%k$K;HMQ
plot '' u 5 title columnhead  #
```

$3$N2 $D$NNc$O!"A4$/F1$8%G!<%?CM$rM?$($F$$$k$N$G$9$,!"0[$J$k=q<0$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

## Newhistogram

=q<0:

```
newhistogram {"<title>" {font "name,size"} {tc <colorspec>}}
             {lt <linetype>} {fs <fillstyle>} {at <x-coord>}
```

0l2s$NIA2h$K2 $D0J>e$N%R%9%H%0%i%`$NAH$r:n$k$3$H$b$G$-$^$9!#$3$N>l9g%3%^%s%I **newhistogram** $r;H$&$3$H$G!"$=$1$i$r6/@)E*$KJ,N%$7!"$^$?$=$1$>$1$N%i%Y%k$rJ,N%$9$k$3$H$,$G$-$^$9!#Nc:

```
set style histogram  cluster
plot newhistogram "Set A", 'a' using 1, '' using 2, '' using 3, \
     newhistogram "Set B", 'b' using 1, '' using 2, '' using 3
```

%i%Y%k "Set A" $H "Set B" $O!"$=$1$>$1$N%R%9%H%0%i%`$NAH$N2<!"x <4$NA4$F$N%i%Y%k$N2<$N0LCV$K8=$o$1$^$9!#

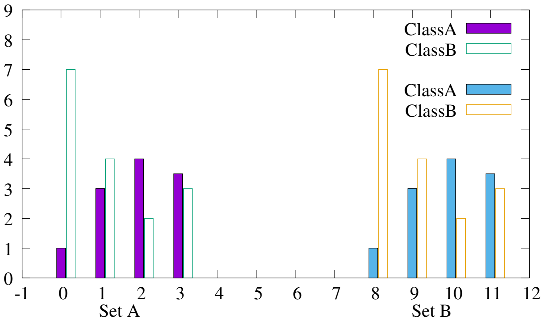
%3%^%s%I newhistogram $O!"%R%9%H%0%i%`$N?'IU$1$r6/@)E*$K;XDj$7$??' (linetype) $G;O$a$k$N$K$b;H$($^$9!#%G%U%)%k%H$G$O!"?'$NHV9f$O%R%9%H%0%i%`$N6-3&$r$^$?$$$G$5$($bO"B3E*$KA}2C$7B3$1$^$9!#K!$NNc$O!"J#?t$N%R%9%H%0%i%`$KF1$8?'IU$1$r;\$7$^$9!#

```
plot newhistogram "Set A" lt 4, 'a' using 1, '' using 2, '' using 3, \
     newhistogram "Set B" lt 4, 'b' using 1, '' using 2, '' using 3
```

F1MM$K!"<!$N%R%9%H%0%i%`$r;XDj$7$? fillstyle $G;O$a$5$;$k$3$H$,2DG=$G$9!#$=$N fillstyle $r **pattern** $K%;%C%H$7$?>l9g!"EI$jDY$7$K;HMQ$5$l$k%Q%?!<%sHV9f$O<+F0E*$KA}2C$5$l$F$$$-$^$9!#

%*%W%7%g%s **at <x-coord>** $O!"$=$N8e$N%R%9%H%0%i%`$Nx :BI8$N0LCV$r <x-coord> $K@_Dj$7$^$9!#Nc:

```
set style histogram cluster
set style data histogram
set style fill solid 1.0 border -1
set xtic 1 offset character 0,0.3
plot newhistogram "Set A", \
     'file.dat' u 1 t 1, '' u 2 t 2, \
     newhistogram "Set B" at 8, \
     'file.dat' u 2 t 2, '' u 2 t 2
```



$3$N>l9g!"2 $DL\$N%R%9%H%0%i%`$N0LCV$O x=8 $+$i;O$^$j$^$9!#

### J#?t$NNs$KEO$k<+F0E*$J7+$jJV$7 (automated)

0l$D$N%G!<%?%U%!%$%k$N$?$/$5$s$NNs$+$i!"0l$D$N%R%9%H%0%i%`$r@8@.$7$?$$>l9g!"plot $N7+$jJV$7 (iteration) 5!G=$r;H$&$HJXMx$G$7$g$&!#0J2<;2>H: **plot for (p. 104)**!#Nc$($P!"3 NsL\$+$i 8 NsL\$^$G$N%G!<%?$r@Q$_>e$2$?7A$N%R%9%H%0%i%`$r@8@.$9$kNc:

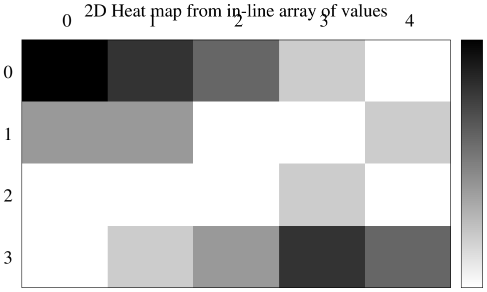
```
set style histogram columnstacked
plot for [i=3:8] "datafile" using i title columnhead
```

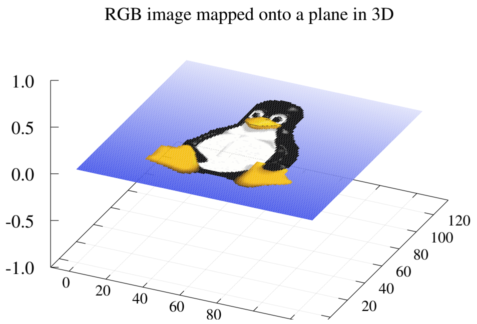
## Image

IA2h%9%?%$%k **image**, **rgbimage**, **rgbalpha** $O!"$$$:$l$b0lMM$KI8K\E@$r<h$C$?3J;R>u%G!<%?CM$r!"2 <!85!"$^$?$O 3 <!85Cf$N$"$kJ?LL>e$K<Ml F$7$^$9!#F~NO%G!<%?$O!"4{$K$"$k%S%C%^%C%W2hA|%U%!%$%k (PNG $N$h$&$JI8=`E*$J%U%)!<%^%C%H$+$iJQ49$7$?$b$N$G$h$$) $+!"C1=c$J?tCMG[Ns$G$9!#

$3$N?^$O!"%9%+%i!<CM$NG[Ns$+$i2 9EYJ,I[$r@8@.$7$?Nc$G$9 (LuCm ?^$,I=<($5$l$F$$$k>l9g)!#8=:_$N%Q%l%C%H$r!"3F%9%+%i!<CM$+$iBP1~$9$k%T%/%;%k$N?'$X$N3d$jEv$F$K;HMQ$7$^$9!#

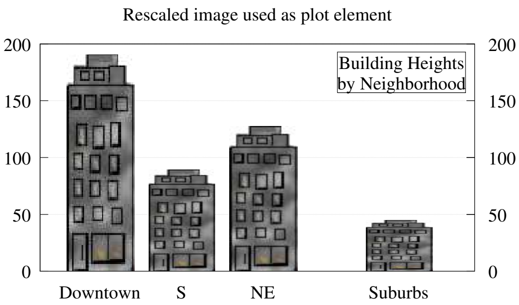
```
plot '-' matrix with image
5 4 3 1 0
2 2 0 0 1
0 0 0 1 0
0 1 2 4 3
e
e
```





F~NO 2 <!8 52hA |$N3F%T%/%;%k (%G!<%?E@) $O! "IA2h%0%i%U Cf$G$OD9J}7A! "$^$?$OJ?9TO;LIBN$H$J$j$^$9! #2hA |$N3F %G!<%?E@$N:BI8$O! "J?9TO;LIBN$NCf?4$r7hD j$7$^$9! #$9$J $o$A! "M x N 8D$N%G!<%?=89g$O M x N %T%/%;%k$N2hA |$r @8@.$7$^$9! #$3$l$O! "M x N 8D$N%G!<%?=89g$, (M-1) x (N-1) MWAG$r:n@.$9$kpm3d $N9=B$$H$OD [$J$j$^$9! #%P%$ %J%j2hA |%G!<%?$N3J;R$NAv::J}8~$O! "DI2C%-!<%o!<%I$G$5 $i$K@)8f2DG=$G$9! #0J2<;2>H: **binary keywords flipx (p. 90)**,**keywords center (p. 90)**, **keywords rotate (p. 90)**! #

3F%T%/%;%k$N x $H y $NBg$-$5$r< ($9$3$H$G! "2hA |%G!<%? $r 2 <!85IA2h:BI87OFb$NFOD j$ND9J}7A$K<}$^$k$h$&$K?- =L$9$k$3$H$,$G$-$^$9! #0J2<;2>H:**binary keywords dx (p. 90)**, **dy (p. 90)**! #1&$N2hA |$r@8@.$9$k$N$K$O! "F1$8 F~NO2hA |$r! "$=$l$>$l dx, dy, origin $r;XD j$7$FJ#?t2s G [CV$7$^$7$?! #F~NO PNG 2hA |$G$"$k%S%k$N3 ($O 50x128 %T%/%;%k$G$9! #9b$$%S%k$O! "**dx=0.5 dy=1.5** $G3d$jEv $F$FIA2h$7! "Dc$$%S%k$O! "**dx=0.5 dy=0.35** $H$7$F$$$^ $9 (LuCm ?^$,I=< ($5$l$F$$$k>l9g)! #



%9%?%$%k **image** $O! "%0%l%$%9%1!<%k (3%?'3,D4)! "$^$? $O%+%i!<%Q%l%C%HCM$r4^$s$G$$$k%T%/%;%k$NF~NO$r=hM}$7$^$9! #$h$C$F 2 <!85IA2h (**plot** %3%^%s%I) $G$O 3 Ns $N%G!<%? (x,y,value) $r! "3 <!85IA2h (**splot** %3%^%s%I) $G$O 4 Ns$N%G!<%? (x,y,z,value) $,I,MW$K$J$j$^$9! #

%9%?%$%k **rgbimage** $O! "@V! "NP! "@D$N 3 $D$N?'@.J, (RGB) $G5-=R$5$l$?%T%/%;%k$NF~NO$r=hM}$7$^$9! #$h$C $F **plot** $G$O 5 <!85%G!<%? (x,y,r,g,b) $,! "**splot** $G$O 6 <!85%G!<%? (x,y,z,r,g,b) $,I,MW$K$J$j$^$9! #@V! "NP! " @D$N3F@.J,$O [0:255] $NHO0OFb$K$"$k$H2>D j$5$l$^$9! #$3$l$O! "PNG $d JPEG %U%!%$%k$G;HMQ$5$l$F$$$k;E AH$_$K9g$C$F$$$^$9 (0J2<;2>H: **binary filetype (p. 89)**)! #$7$+$7! "RGB @.J,$H$7$F [0:1] $NHO0O$N<B?tCM $r<h$k;EAH$_$r;HMQ$9$k$h$&$J%G!<%?%U%!%$%k$bCf$K$O$"$j$^$9! #$=$N$h$&$J%G!<%?$G **rgbimage** %9%?%$%k$r ;HMQ$9$k$K$O! "?'@.J,$r [0:255] $NHO0O$K%9%1!<%kJQ49$7$J$1$l$P$$$1$^$;$s! #

%9%?%$%k **rgbalpha** $O! "@V! "NP! "@D$N RGB @.J,$K2C$ ($F! "%"%k%U% !CM (F)2a%Q%i%a!<%?) $N>pJs$b4^$s$@ %T%/%;%k$NF~NO$r=hM}$7$^$9! #$h$C$F! "**plot** $G$O 6 <!85%G!<%? (x,y,r,g,b,a) $,! "**splot** $G$O 7 <!85%G!<%? (x,y,z,r,g,b,a) $,I,MW$K$J$j$^$9! #@V! "NP! "@D! "$*$h$S% "%k%U% !$N3F@.J,$O[0:255] $NHO0OFb$K$"$k$H2>D j$5$l $^$9! #RGBA @.J,$, [0:1] $NHO0O$N<B?tCM$G$"$k%G!<%?$rIA2h$9$k$K$O! "?'@.J,$r [0:255] $NHO0OFb$K%9%1!< %kJQ49$7$J$1$l$P$$$1$^$;$s! #

## F)L@2= (transparency)

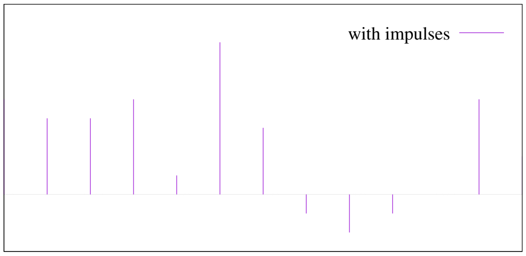
IA2h%9%?%$%k **rgbalpha** $O! "F~NO%G!<%?$N3F%T%/%;%k$, [0:255] $NHO0OFb$N% "%k%U% !CM$r; }$C$F$$$kI,MW$,$" $j$^$9! #alpha = 0 $N%T%/%;%k$O40A4$JF)L@$G! "$=$N2<(1 |) $NIA2hMWAG$rA4$/JQ$ ($^$;$s! #alpha = 255 $N%T %/%;%k$O40A4$JITF)L@$G$9! #$9$Y$F$N=PNO7A<0$O! "$3$l$i 2 $D$NN>6KC<$JCM$r%5%]!<%H$7$^$9! #0 < alpha < 255 $N%T%/%;%k$OH>F)L@$G! "H>F)L@$r%5%]!<%H$7$F$$$J$$=PNO7A<0$G$O! "$=$NCM$r 0 $+ 255 $N$$$:$l$+$K4]$a $^$9! #

## Image pixels

=PNO7A<0$K$h$C$F$O! "2 <!85$ND9J}7ANN0hFb$G$N2hA |%G!<%?IA2h$N! "%G%P%$%9$d%i%$%V%i%j$K0MB8$7$?:GE,2= %k!<%A%s$r;HMQ$7$F$$$^$9! #$3$l$O! "Nc$ ($P%/%j%C%T%s%0$d?-=L$,$&$^$/$J$+$C$?$j! "1o$,7g$1$k$J$I! "K>$^ $7$/$J$$=PNO$r@8@.$9$k$3$H$,$"$j$^$9! #%-!<%o!<%I **pixels** $O! "$=$N$h$&$J%k!<%A%s$NBe$o$j$K! "2hA |$r 1 %T%/%;%k$:$DIA2h$9$k$h$&$J0lHIE*$J%3!<%I$r;HMQ$9$k$h$& gnuplot $K;X< ($7$^$9! #$3$NIA2h%b!<%I$G$O! "IA 2h$OCY$/! "$H$F$bBg$-$J=PNO%U%!%$%k$r@8@.$7$^$9$,! "$I$N=PNO7A<0$G$b6&DIE*$J8+$?L\$r:n@.$7$F$/$l$k$G $7$g$& (%*%W%7%g%s **pixels** $O! "0JA0$N gnuplot $G$O **failsafe** $H8F$P$l$F$$$^$7$?)! #Nc:

```
plot 'data' with image pixels
```

# Impulses



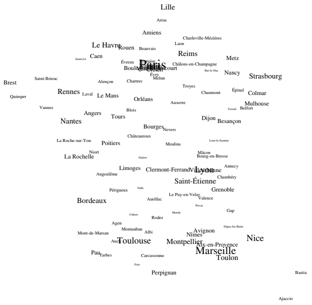
**impulses** %9%?%$%k$O!"2 <!85IA2h$G$O y=0 $+$i3FE@$N y $NCM$X$N!"3 <!85IA2h$G$O z=0 $+$i3FE@$N z $NCM$X$N!" ?bD>$J@~J,$rI=<($7$^$9!#y $d z $NCM$OI i$NCM$G$b$h$$ $3$H$KCm0U$7$F$/$@$5$$!#%G!<%?$ND I2ONs$r3F?bD>@~J, $N?'$N@)8f$KMxMQ$G$-$^$9!#$3$N%9%?%$%k$r 3 <!85IA2h $G;HMQ$9$k>l9g!"B@$$@~(linewidth > 1) $rMxMQ$9$k$H$h $j8z2LE*$G$7$g$&!#$=$l$O 3 <!85$NK@%0%i%U$K;w$?$b$N $K$J$j$^$9!#

```
1 Ns:  y
2 Ns:  x  y     # [x,0] $+$i [x,y] $X$N@~ (2D)
3 Ns:  x  y  z  # [x,y,0] $+$i [x,y,z] $X$N@~ (3D)
```

# Labels

%9%?%$%k **labels** $O!"%G!<%?%U%!%$%k$+$i:BI8$HJ8;zNs $rFI$_9~$_!"$=$NJ8;zNs$r$=$N 2 <!85!"$^$?$O 3 <!85 :BI8$KCV$-$^$9!#$3$l$O4pK\E*$K 3 Ns!"$^$?$O 4 Ns$NF~ NO$rI,MW$H$7$^$9!#$5$i$KM>J,$JF~NONs$O!"J8;zNs$N2s E>3Q(%-!<%o!<%I **rotate variable**) $dJ8;z?' (0J2<;2>H: **textcolor variable (p. 42)**) $N$h$&$J!"E@Kh$KJQF0$9 $kB0@-CM$,;XDj$5$l$?$H$_$J$5$l$^$9!#

```
3 Ns:  x  y  string    # 2 <!85HG
4 Ns:  x  y  z  string # 3 <!85HG
```




%U%)%s%H!"?'!"2sE>3Q$d$=$NB>$NI A2h%F%-%9%H$NB0@-$OD I2C%*%W%7%g%s$H$7$F;XDj2DG=$G$9 (0J2<;2>H: **set label (p. 141)**)!#<!$NNc$O!"F~NO%U%!%$%k$N 1 NsL\$+$i<h$C$?;T$NL>A0$+$i:n$i$l$kJ8;zNs$r!"4, 5 NsL\$+$i<h$C$?CO?^:BI8$KIA2h$7$^$9!#%U%)%s%H%5%$%:$O!"3 NsL\$NCM$+$i7W;;$7$F$$$F!"$3$N>l9g$O$=$l$O?M8}$r0UL#$7$F$$$^$9!#

```
CityName(String,Size) = sprintf("{/=%d %s}", Scale(Size), String)
plot 'cities.dat' using 5:4:(CityName(stringcolumn(1),$3)) with labels
```

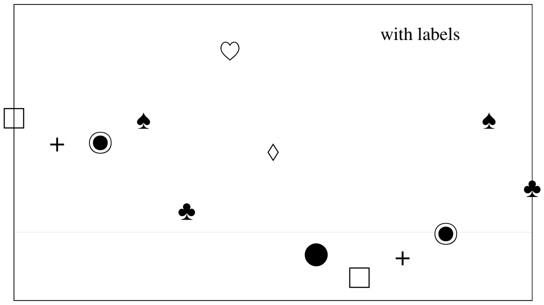
%U%)%s%H%5%$%:$r!"8D!9$N;T$NL>A0$KBP$7$F0[$J$k%5%$%:$K9g$o$;$J$/$F$$$$$J$i$P!"%3%^%s%I$O$b$C$H4JC1 $G$9:

```
plot 'cities.dat' using 5:4:1 with labels font "Times,8"
```

labels $K **hypertext** $,$D$$$F$$$k>l9g!"$=$NJ8;zNs$O%^%&%9$,$=$l$KBP1~$9$kE@$N>e$KMh$?$H$-$K$@$18=$o $l$^$9!#0J2<;2>H: **hypertext (p. 143)**!#$3$N>l9g%O%$%Q!<%F%-%9%H$NCV$->l=j$H$7$F5!G=$9$kE@$r:n$k$?$a $K$=$N%i%Y%k$N **point** B0@-$rM-8z$K$9$kI,MW$,$"$j$^$9:

```
plot 'cities.dat' using 5:4:1 with labels hypertext point pt 7
```

%9%?%$%k **points** $G$"$i$+$8$aDj5A$5$l$F$$$kE@$N5-9f$,E,@Z$G$J$$!"$"$k$$$O==J,$G$J$$>l9g!"$=$NBe$o$j$H$7$F%9%?%$%k **labels** $r;H$&$3$H$b$G$-$^$9!#Nc$($P!"0J2<$OC10lJ8;z$H$7$FA*Br$5$l$kAH$rDj5A$7!"3 NsL\$N%G!<%?CM$KBP1~$9$k$=$N0l$D$r%0%i%U$N3FE@$K3d$jEv$F$kNc$G$9(LuCm 0J2<$N%5%s%W%k$N <UTF-8 J8;zNs> $NItJ,$K$O!"85!9!"4]$KCfE@5-9f$d" "!"!\!"%H%i%s%W5-9f$J$I$N UTF-8 J8;zNs$,JB$s$G$$$^$9$,!"$3$NF|K\8lLu$H$ON>N)$7$J$$$?$a<h$j=|$$$F$$$^$9):



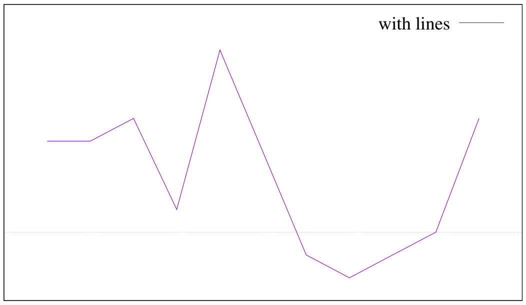
```
set encoding utf8
symbol(z) = "<UTF-8 J8;zNs>"[int(z):int(z)]
splot 'file' using 1:2:(symbol($3)) with labels
```

0J2<$O!"4 NsL\$NCM$r2DJQCM$N2sE>3Q$H$7!"5 NsL\$NCM$rJ8;z?' ("tc") $H$9$k%i%Y%k$N;HMQNc$G$9!#2DJQCM$N?';XDj$O!">o$K **using** ;XDj$N:G8e$NNs$+$i<h$k$3$H$KCm0U$7$F$/$@$5$$!#

```
plot $Data using 1:2:3:4:5 with labels tc variable rotate variable
```

# Lines

**lines** %9%?%$%k$ONY@\$9$kE@$r??D>$J@~J,$G7k$S$^$9!#$3$l$O!"2 <!85IA2h$G$b!"3 <!85IA2h$G$b;HMQ$G$-!"4pK\E*$K$O!"1 Ns$+2 Ns$+3 Ns$+$NF~NO%G!<%?$rI,MW$H$7$^$9!#M>J,$JF~NONs$O!"@~$N?'$NJQ99$J$I$N>pJs$,Ds6!$5$l$?$b$N$H$7$F;HMQ$5$l$^$9(0J2<;2>H: **rgbcolor variable (p. 42)**)!#




2 <!85("using" ;XDj$J$7) $N>l9g

```
1 Ns:  y        # 9THV9f$K$h$k0EL[$N x
2 Ns:  x  y
```

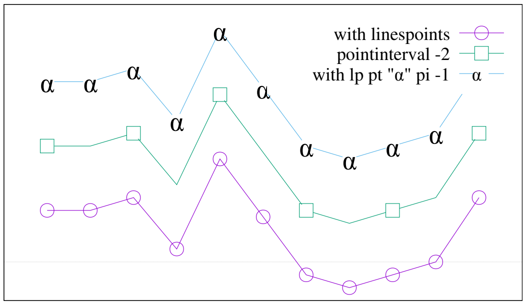
3 <!85("using" ;XDj$J$7) $N>l9g

```
1 Ns:  z        # x $O0EL[$N9THV9f!"y $O index $+$i
3 Ns:  x  y  z
```

0J2<$b;2>H: **linetype (p. 143)**, **linewidth (p. 174)**, **linestyle (p. 174)**!#

# Linespoints

**linespoints** %9%?%$%k(>JN,7A **lp**) $O!"NY@\$9$kE@$r??$CD>$0$J@~J,$G7k$S!"$=$N8e$G:G=i$KLa$C$F3FE@$K>.$5$J5-9f$rIA$-$^$9!#E@5-9f$O!"**set pointsize** $G7h$^$k%G%U%)%k%H$NBg$-$5$GIA$-$^$9$,!""plot %3%^%s%I>e$GE@$N%5%$%:$r;XDj$7$?$j!"$"$k$$$OF~NO%G!<%?$NDI2CNs$G8DJL$NE@%5%$%:$r;XDj$9$k$3$H$b$G$-$^$9!#DI2C$NF~NONs$O!"8DJL$N@~$N?'$J$I$N>pJs$rDs6!$9$k$N$K$b;H$o$l$^$9!#0J2<;2>H: **lines (p. 65)**, **points (p. 66)**!#

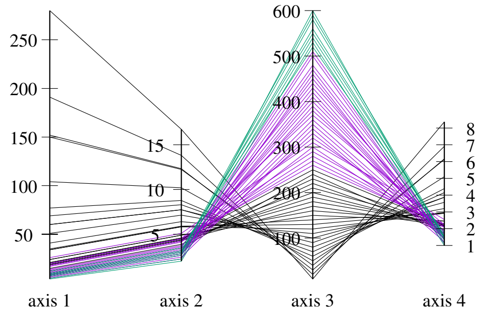


%0%i%U$N$9$Y$F$NE@$K5-9f$N0u$r$D$1$k$+H]$+$r@)8f$9$k2 $D$N%-!<%o!<%I **pointinterval** (>JN,7A **pi**), **pointnumber** (>JN,7A **pn**) $,$"$j$^$9!#

**pi N** $"$k$$$O **pi -N** $O!"N 8DKh$K1 $D$@$15-9f$rCV$/$h$&gnuplot $K;X<($7$^$9!#Ii$NCM$r;XDj$9$k$H!"5-9f$N2<$N@~J,$NItJ,$r>C$7$^$9!#$=$N>C$9ItJ,$N%5%$%:$O **set pointintervalbox** $G@)8f$G$-$^$9!#

**pn N** $"$k$$$O **pn -N** $O!"%G!<%?E@$N$&$A N 8D$@$1%i%Y%kIU$1$9$k$h$&gnuplot $K;X<($7$^$9!#E@$O$=$N%G!<%?A4BN$KEO$C$F6QEy$J4V3V$K<h$j$^$9!#**pi** F1MM!"Ii$NCM$r;XDj$9$k$H!"5-9f$N2<$N@~J,$NItJ,$r>C$7$^$9!#

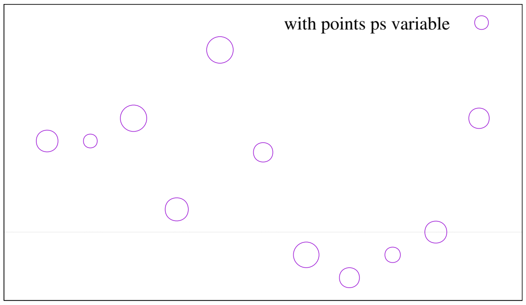
## Parallelaxes



J?9T:BI8IA2h(parallel axis plot, parallel coordinates plot $H$b8F$P$l$k) $O!"B?<!85%G!<%?$NAj4X$r;k3P2=$7$^$9!# 3FF~NONs$O!"JL!9$N%9%1!<%k$N=D<4$K3d$jEv$F$i$l$^$9!# F~NO1 9T$+$iFI$_9~$s$@$=$l$>$l$NNs$NCM$O!"1 $DL\$N<4$+$i2 $DL\$N<4$X!"2 $DL\$N<4$+$i3 $DL\$N<4$X$H@~J,$G7k$P$l$^$9!#$9$J$o$AJ?9T:BI8IA2hCf$G$O!"F~NO$N3F9T$,$=$l$>$lFHN)$7$?@^$l@~$K$J$j$^$9!#$=$l$i$r?t<oN`$KJ,N`$7$F?'$r3d$jEv$F$k$3$H$O$h$/9T$o$l$^$9$,!"$=$l$O!"$=$NJ,N`$H<4$H$N4V$N4X78$r;k3PE*$KD4::$9$k$3$H$r2DG=$K$7$^$9!#%G%U%)%k%H$G$O!"gnuplot $O<+F0E*$K8D!9$N<4$NHO0O!"%9%1!<%k$rF~NO%G!<%?$+$i7hDj$7$^$9$,!"DL>o$N **set axis range** %3%^%s%I$K$h$C$F$=$l$r%+%9%?%^%$%:$9$k$3$H$b2DG=$G$9!#0J2<;2>H: **set paxis (p. 157)**!#

J?9T<4$N:GBg8D?t$O!"gnuplot $N%3%s%Q%$%k;~$K8GDj$5$l!"$=$N:GBgCM$O!"**show version long** $GI=<($5$l$^$9!#

## Points



**points** %9%?%$%k$O3FE@$K>.$5$J5-9f$rI=<($7$^$9!#$=$N5-9f$N%G%U%)%k%H$NBg$-$5$rJQ99$9$k$K$O%3%^%s%I **set pointsize** $,;H$($^$9!#%G%U%)%k%H$NE@<o$O!"@~<o$HF1$8$b$N$K$J$j$^$9!#0J2<;2>H: **linetype (p. 143)**!#plot %3%^%s%I$K **using** ;XDj$,$J$$>l9g$O!"F~NO%G!<%?Ns$O2>Dj$5$l$?J}K!$G2r<a$5$l$^$9!#0J2<;2>H: **style lines (p. 65)**!#

:G=i$N8 $D$NE@<o$O!"$9$Y$F$N=PNO7A<0$G6&DL$G$9$,!"$h$jB?$/$NE@<o$r8DJL$K%5%]!<%H$9$k=PNO7A<0$b$"$j$^$9!#8=:_$N=PNO7A<0$N@_Dj$G$I$N$h$&$JE@<o$,MQ0U$5$l$F$$$k$+$r8+$k$K$O!"%3%^%s%I **test** $r;HMQ$7$F$/$@$5$$!#$^$?!"2<$NNc$N$h$&$K$7$F!"G$0U$N0u;z2DG=J8;z$rE@<oHV9f$NBe$o$j$K;HMQ$9$k$3$H$b$G$-$^$9!#$h$jD9$$J8;zNs$O!"IA2h%9%?%$%k **points** $G$O$J$/**labels** $r;H$($P=PNO$G$-$^$9!#

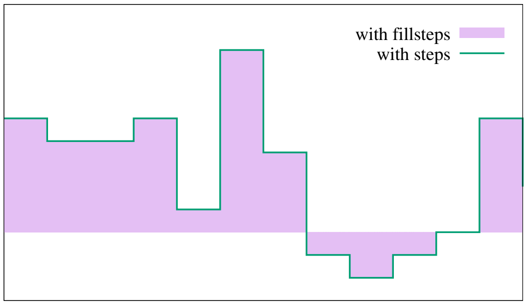
```
plot sin(x) with points pt "#"
```

E@<o$H$7$F!"G$0U$NUTF-8 J8;z$r;HMQ$G$-$^$9!#0J2<;2>H: **utf8 (p. 128)**!# plot %3%^%s%I>e$G%-!<%o!<%I **pointtype**, **pointsize**, **linecolor** $r;H$&:]!"HV9f$NBe$o$j$K%-!<%o!<%I **variable** $rDI2C$9$k$3$H$,$G$-$^$9!#$3$N>l9g!"3FE@$NBP1~$9$kB0@-CM$rF~NO%G!<%?$NDI2CNs$+$i<hF@$7$^$9!#2DJQ(variable) pointsize CM$O!">o$K **using** ;XDj$GM?$($i$l$k:G=i$NDI2CNs$+$i<h$j!"2DJQ color CM$O!">o$K:G8e$NDI2CNs$+$i<h$j$^$9!#:#$N$H$3$m$O!"%9%?%$%k **linespoints** $NIA2h$G@~$HE@$N?'$rJL!9$K;XDj$9$k$3$H$O$G$-$^$;$s!#3FE@$KBP$7$F3 $D$NB0@-$r$9$Y$F;XDj$9$k>l9g$O!"F~NO%G!<%?Ns;XDj$N=gHV$OO0J2<$N$h$&$K$J$j$^$9!#

```
    plot DATA using x:y:pointsize:pointtype:color \
         with points lc variable pt variable ps variable
```

Cm0U: !V%f!<%6Dj5AJQ?t!W$NJ}$N variable $K4X$9$k>pJs$K$D$$$F$O!"0J2<;2>H: **variables (p. 36)**!#

## Steps



**steps** %9%?%$%k$O2 <!85IA2h$G$N$_MxMQ2DG=$G$9!#$3$l$O 2 K\$N@~J,$GNY$j9g$&E@$r$D$J$.$^$9: 1 K\L\$O (x1,y1) $+$i (x2,y1) $^$G!"2 K\L\$O (x2,y1) $+$i (x2,y2) $^$G!# F~NONs$N>r7o$O!"**lines** $d **points** $KBP$9$k$b$N$HF1$8$G $9!#**fsteps** $H **steps** $N0c$$$O!"**fsteps** $O!"@^$1@~$r@h$K y J}8~$K=q$$$F$+$i<!$Kx J}8~$K=q$/$N$KBP$7!"**steps** $O @h$Kx J}8~$K=q$$$F$+$i<!$Ky J}8~$K=q$-$^$9!#6J@~$H %Y!<%9%i%$%s$G$"$k y=0 $H$N4V$NNN0h$rEI$jDY$9$K$O!" **fillsteps** $r;HMQ$7$F$/$@$5$$!#0J2<$b;2>H `steps %G%b!#`

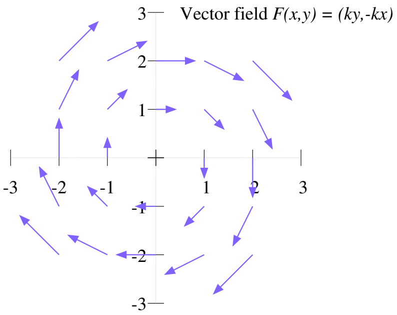
# Rgbalpha

0J2<;2>H: **image (p. 62)**!#

# Rgbimage

0J2<;2>H: **image (p. 62)**!#

# Vectors



2 <!85$N **vectors** %9%?%$%k$O (x,y) $+$i (x+xdelta,y+ydelta) $^$G$N%Y%/%H%k$r=q$-$^$9!#3 <!85$N **vectors** %9%?%$%k$bF1MM$G$9$,!"%G!<%?$O4pK\E* $K6 NsI,MW$G$9!#$$$:$l$N>l9g$b!"F~NONs$rDI2C (2D $G $O5 NsL\!"3D $G$O7 NsL\) $9$k$H!"$=$l$i$O3F%G!<%?E@ Kh$N variable color >pJs (0J2<;2>H: **linecolor (p. 41)**, **rgbcolor variable (p. 42)**) $H$7$F;H$o$l$^$9!#3F%Y% /%H%k$N@hC<$K$O>.$5$JLp@h$b=q$+$l$^$9!#

```
4 Ns:  x  y  xdelta  ydelta
6 Ns:  x  y  z  xdelta  ydelta  zdelta
```

%-!<%o!<%I "with vectors" $O!"$=$N8e$m$K!"%$%s%i%$%s$N arrow %9%?%$%k;XDj$d!"$"$i$+$8$aDj5A$5$l$F$$ $k arrow %9%?%$%k$N;2>H!"$"$k$$$ONs$+$i3F%Y%/%H%k$KBP$9$kI,MW$J arrow %9%?%$%k$N%$%s%G%C%/%9$rFI$` $h$&$J;XDj$rH<$&$3$H$,$G$-$^$9!#CmOU: "arrowstyle variable" $r;HMQ$9$k>l9g!"BP1~$9$k%Y%/%H%k$,IA2h$5 $l$k:]$K$O$=$l$, arrow $NB0@-CM$9$Y$F$rKd$a$k$N$G$=$N plot %3%^%s%IFb$KB>$N@~B0@-$d arrow %9%?%$%k;X Dj$r$3$N%-!<%o!<%I$H:.:_$5$;$k$3$H$O$G$-$^$;$s!#

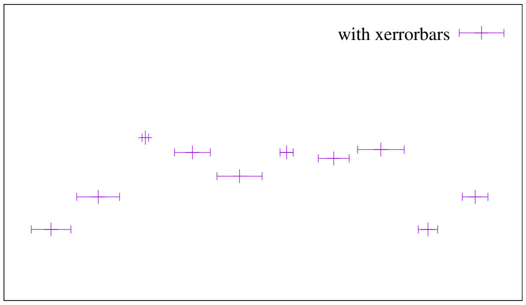
```
plot ... with vectors filled heads
plot ... with vectors arrowstyle 3
plot ... using 1:2:3:4:5 with vectors arrowstyle variable
```

Nc:

```
plot 'file.dat' using 1:2:3:4 with vectors head filled lt 2
splot 'file.dat' using 1:2:3:(1):(1):(1) with vectors filled head lw 2
```

vectors %9%?%$%k$r;H$C$F$N splot $O **set mapping cartesian** $N$_$G%5%]!<%H$5$l$F$$$^$9!#**set clip one** $H **set clip two** $O2 <!85$N%Y%/%H%k$NIA2h$K1F6A$rM?$($^$9!#0J2<;2>H: **set clip (p. 118)**, **arrowstyle (p. 170)**!#

# Xerrorbars

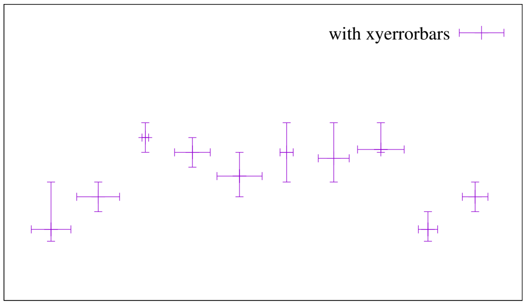


**xerrorbars** %9%?%$%k$O2<!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**xerrorbars** $O!"?eJ?$N8m:9;X<(@~(error bar) $,I=<($5$l$k0J30$O**points** $HF1$8$G$9!#3FE@(x,y) $K$*$$$F (xlow,y) $+$i (xhigh,y) $^$G!"$^$?$O (x-xdelta,y) $+$i (x+xdelta,y) $^$G$N@~J,$,0z$+$l$^$9$,!"$3$l$i$O$$$/$D$N%G!<%?Ns$,M?$($i$l$k$+$K$h$C$FJQ$o$j$^$9!#8m:9;X<(@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#$3$N%9%?%$%k$O4pK\E*$K!"3 Ns$+4 Ns$N%G!<%?$,I,MW$G$9:

```
3 Ns:   x   y   xdelta
4 Ns:   x   y   xlow   xhigh
```

F~NONs$rDI2C (4,5 NsL\) $9$k$H!"$=$l$i$OE@$N variable color >pJs$H$7$F;H$o$l$^$9!#

## Xyerrorbars



**xyerrorbars** %9%?%$%k$O2<!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**xyerrorbars** $O!"?eJ?!"?bD>$N8m:9;X<(@~(error bar) $bI=<($5$l$k0J30$O**points** $HF1$8$G$9!#3FE@(x,y) $K$*$$$F (x,y-ydelta) $+$i(x,y+ydelta) $^$G$H (x-xdelta,y) $+$i (x+xdelta,y) $^$G!"$^$?$O(x,ylow) $+$i (x,yhigh) $^$G$H (xlow,y) $+$i (xhigh,y) $^$G$N@~J,$,0z$+$l$^$9$,!"$3$l$i$O$$$/$D$N%G!<%?Ns$,M?$($i$l$k$+$K$h$C$FJQ$o$j$^$9!#8m:9;X<(@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#$3$l$O4 Ns$+!"6 Ns$N%G!<%?$,I,MW$G$9!#

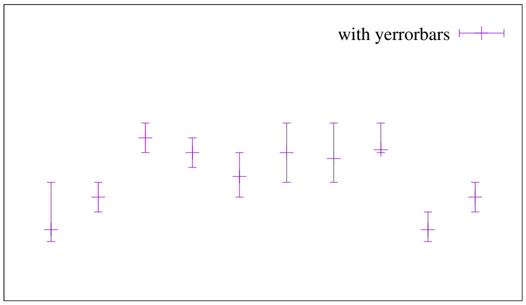
```
4 Ns:   x   y   xdelta   ydelta
6 Ns:   x   y   xlow   xhigh   ylow   yhigh
```

%G!<%?$,!"%5%]!<%H$5$l$F$$$J$$:.9g7?$N7A<0$GM?$($i$l$?>l9g!"**plot** %3%^%s%I$N **using** %U%#%k%?$r;H$C$FE,@Z$J7A$KD>$5$J$$$H$$$1$^$;$s!#Nc$($P%G!<%?$, (x,y,xdelta,ylow,yhigh) $H$$$&7A<0$G$"$k>l9g!"0J2<$N$h$&$K$7$^$9:

```
plot 'data' using 1:2:($1-$3):($1+$3):4:5 with xyerrorbars
```

F~NONs$rDI2C (5,7 NsL\) $9$k$H!"$=$l$i$O3F%G!<%?E@Kh$N variable color >pJs$H$7$F;H$o$l$^$9!#

## Yerrorbars



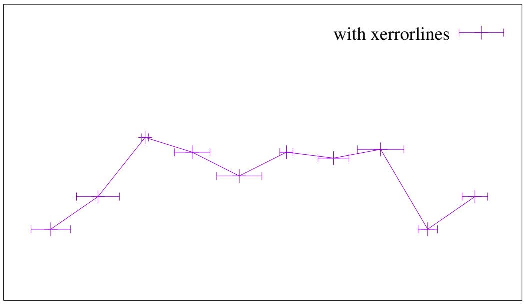

**yerrorbars** ($^$?$O**errorbars**) %9%?%$%k$O2<!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**yerrorbars** $O!"?bD>$N8m:9;X<(@~(error bar) $,I=<($5$l$k0J30$O**points** $K;w$F$$$^$9!#3FE@(x,y) $K$*$$$F (x,y-ydelta) $+$i(x,y+ydelta) $^$G!"$^$?$O (x,ylow) $+$i (x,yhigh) $^$G$N@~J,$,0z$+$l$^$9$,!"$3$l$i$O$$$/$D$N%G!<%?Ns$,M?$($i$l$k$+$K$h$C$FJQ$o$j$^$9!#8m:9;X<(@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#

```
2 Ns:   [0EL[$N x]   y   ydelta
3 Ns:   x   y   ydelta
4 Ns:   x   y   ylow   yhigh
```

F~NONs$rDI2C (4,5 NsL\) $9$k$H!"$=$l$i$OE@$N variable color >pJs$H$7$F;H$o$l$^$9!#

0J2<$b;2>H`errorbar` %G%b!#

## Xerrorlines

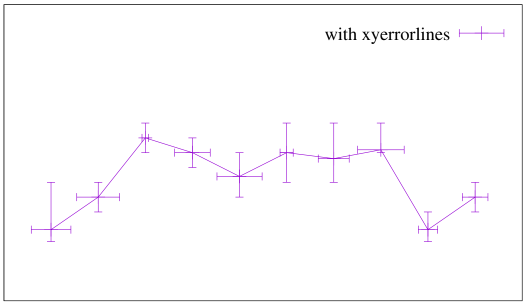


**xerrorlines** %9%?%$%k$O 2 <!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**xerrorlines** $O **linespoints** $K;w$F$$$^$9$,!"?eJ?$N8m:9@~$,IA$+$l$k$3$H$,0c$$$^$9!#3FE@ (x,y) $G!"%G!<%?Ns$N8D?t$K1~$8$F (xlow,y) $+$i (xhigh,y) $^$G!"$^$?$O (x-xdelta,y) $+$i (x+xdelta,y) $^$G$N@~J,$,IA$+$l$^$9!#8m:9@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#4pK\E*$K$O!"3 Ns$+4 Ns$N%G!<%?$,I,MW$G$9:

```
3 Ns:  x  y  xdelta
4 Ns:  x  y  xlow  xhigh
```

F~NONs$rDI2C (4,5 NsL\) $9$k$H!"$=$l$i$OE@$N variable color >pJs$H$7$F;H$o$l$^$9!#

## Xyerrorlines



**xyerrorlines** %9%?%$%k$O 2 <!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**xyerrorlines** $O **linespoints** $K;w$F$$$^$9$,!"?eJ?$H?bD>$N8m:9@~$bIA$+$l$k$3$H$,0c$$$^$9!#3FE@ (x,y) $G!"%G!<%?Ns$N8D?t$K1~$8$F!"(x,y-ydelta) $+$i (x,y+ydelta) $^$G$H (x-xdelta,y) $+$i (x+xdelta,y) $^$G!"$"$k$$$O (x,ylow) $+$i (x,yhigh) $^$G$H (xlow,y) $+$i (xhigh,y) $^$G$N@~J,$,IA$+$l$^$9!#8m:9@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#$3$l$O!"4 Ns$+6 Ns$NF~NO%G!<%?$,I,MW$G$9!#

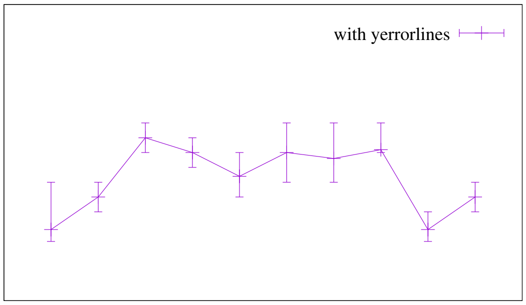
```
4 Ns:  x  y  xdelta  ydelta
6 Ns:  x  y  xlow  xhigh  ylow  yhigh
```

%G!<%?$,!"%5%]!<%H$5$l$F$$$J$$$:.9g7?$N7A<0$GM?$($i$l$?>l9g!"**plot** %3%^%s%I$N **using** %U%#%k%?$r;H$C$FE,@Z$J7A$KD>$5$J$$$H$$$1$^$;$s!#Nc$($P%G!<%?$, (x,y,xdelta,ylow,yhigh) $H$$$&7A<0$G$"$k>l9g!"0J2<$N$h$&$K$7$^$9:

```
plot 'data' using 1:2:($1-$3):($1+$3):4:5 with xyerrorlines
```

F~NONs$rDI2C (5,7 NsL\) $9$k$H!"$=$l$i$O3F%G!<%?E@Kh$N variable color >pJs$H$7$F;H$o$l$^$9!#

## Yerrorlines



**yerrorlines** ($^$?$O **errorlines**) %9%?%$%k$O 2 <!85$N%G!<%?IA2h$N$_$GMxMQ2DG=$G$9!#**yerrorlines** $O **linespoints** $K;w$F$$$^$9$,!"?bD>$N8m:9@~$,IA$+$l$k$3$H$,0c$$$^$9!#3FE@ (x,y) $G!"%G!<%?Ns$N8D?t$K1~$8$F (x,y-ydelta) $+$i (x,y+ydelta) $^$G!"$^$?$O (x,ylow) $+$i (x,yhigh) $^$G$N@~J,$,IA$+$l$^$9!#8m:9@~$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#$3$l$O!"3 Ns$+4 Ns$NF~NO$,I,MW$G$9!#

```
3 Ns:  x  y  ydelta
4 Ns:  x  y  ylow  yhigh
```

F~NONs$rDI2C (4,5 NsL\) $9$k$H!"$=$l$i$OE@$N variable color >pJs$H$7$F;H$o$l$^$9!#

0J2<$b;2>H!#% (%i!<%P!<$N%G%b

## Zerrorfill

=q<0:

```
    splot DATA using 1:2:3:4[:5] with zerrorfill {fc|fillcolor <colorspec>}
                {lt|linetype <n>} {<line properties>}
```

IA2h%9%?%$%k **zerrorfill** $O!"2 <!85$NIA2h%9%?%$%k$N0l$D$NJQ<o$N$h$&$J$b$N$G$9!#$3$l$O!"2 $D$N4X?t$N4V!"$^$?$OF1$8 x $KBP$7$F 2 $D$N y :BI8$NE@$rM?$($FF@$i$l$k%G!<%?$N@^$l@~$N4V$NNN0h$rEI$jDY$7$^$9!#$3$l$O!"4 Ns$+5 Ns$NF~NO$,I,MW$G$9!#

```
    4 Ns:   x   y   z   zdelta
    5 Ns:   x   y   z   zlow   zhigh
```

zlow $H zhigh $N4V$NNN0h$rEI$jDY$7!"$=$N8e z $NCM$N$H$3$m$K@~$rIA$-$^$9!#%G%U%)%k%H$G$O!"$=$N@~$HEI$jDY$7$K$OF1$8?'$r;H$$$^$9$,!"$=$N?'$Osplot %3%^%s%I>e$GJQ99$G$-$^$9!#EI$jDY$7$N@_Dj$O!"Bg0hE*$J fill style $N1F6A$b<u$1$^$9!#0J2<;2>H **set style fill**!#

splot %3%^%s%I$KJ#?t$N6J@~$r;XDj$7$?>l9g$O!"8e$KIA$$$?6J@~$,!"A0$N$9$Y$F$N6J@~$r1#$7$F$7$^$&2DG=@-$,$"$j$^$9!#8+$k?MB&$N<jA0$N6J@~$N$_$,1#$9$h$&$KE,@Z$J?<$5=g$NJB$Y$+$($r9T$&$K$O!"%3%^%s%I **set pm3d depthorder** $r;HMQ$7$F$/$@$5$$!#;DG0$J$,$i!"$3$l$O z $NCM$KBP1~$9$k$9$Y$F$N@^$l@~$rIA$$$?8e$K!"$9$Y$F$NNN0h$NEI$jDY$7$r9T$$$^$9!#$h$C$F!"@^$l@~$r8+$($k$h$&$K$7$F!"$+$DNN0h$NEI$jDY$7$N?<$5=g$NJB$Y$+$($r9T$&$K$O!"NN0h$NEI$jDY$7$OItJ,E*$KF)2a (transparent) $5$;$k$+!"%Y%?EI$j (solid fill) $NBe$o$j$K%Q%?!<%sEI$j (pattern fill) $r;HMQ$9$k$H$$$$$+$b$7$l$^$;$s!#

0J2<$N:G=i$N2 $D$NNc$NEI$jDY$7NN0h$O!"F1$8$b$N$K$J$j$^$9!#

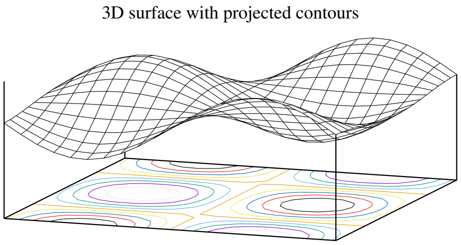
```
    splot 'data' using 1:2:3:4 with zerrorfill fillcolor "grey" lt black
    splot 'data' using 1:2:3:($3-$4):($3+$4) with zerrorfill
    splot '+' using 1:(const):(func1($1)):(func2($1)) with zerrorfill
    splot for [k=1:5] datafile[k] with zerrorfill lt black fc lt (k+1)
```

$3$NIA2h%9%?%$%k$O!":t%0%i%U (fence plot) $r:n@.$9$k$N$K;H$&$3$H$b$G$-$^$9!#0J2<;2>H: **fenceplots (p. 71)**!#

## 3 <!85IA2h (3D plots)

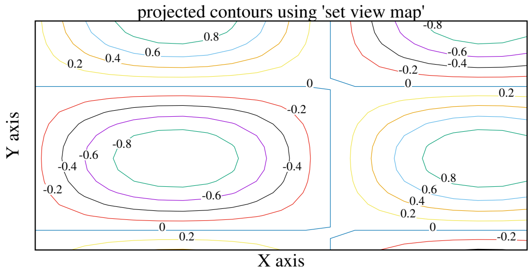
3 <!85%0%i%U$O!"%3%^%s%I **plot** $G$O$J$/%3%^%s%I **splot** $r;H$C$F@8@.$7$^$9!#B?$/$N 2 <!85IA2h%9%?%$%k (points, images, impulse, labels, vectors) $O!"z :BI8%G!<%?Ns$rDI2C;XDj$9$l$P 3 <!85$G$b;H$($^$9!#2 <!85<M1F%0%i%U$N$_$,M_$7$$>l9g$G$b!"splot %3%^%s%I$r;H$C$F@8@.$7$J$1$l$P$$$1$J$$IA2h7?(pm3d coloring, surfaces, contours) $bCf$K$O$"$j$^$9!#

### 6JLLIA2h (Surface plots)



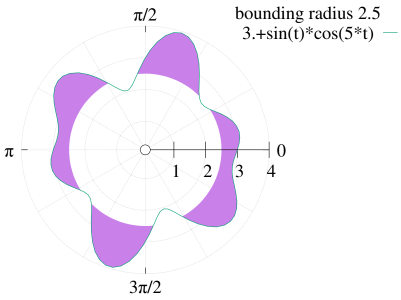
IA2h%9%?%$%k **splot with lines** $d **splot with surface** $O$$:$l$b6JLL$r3J;R@~$G@8@.$7$^$9!#6JLL$NEI$jDY$7$O!"%9%?%$%k **splot with pm3d** $G9T$&$3$H$,$G$-$^$9!#6JLL$ODL>o!"$=$l$,3 <!85$N6JLL$G$"$k$H$O$C$-$j$o$+$k$h$&$JE,@Z$J;kJ}8~$+$iI=<($5$l$^$9!#0J2<;2>H: **set view (p. 182)**!#$=$N>l9g!"X, Y, Z <4$O$9$Y$F$FIA2hFb$KI=<($5$l$^$9!#3 <!85E*$J:x3P$O!"1#@~=hM}$d!"6JLIMWAG$N?<$5@0Ns$K$h$j!"$h$jA}I}$5$l$^$9!#0J2<;2>H: **hidden3d (p. 135)**, $*$h$S **set pm3d (p. 157)** $N%*%W%7%g%s$G$"$k **depthorder (p. 159)**!#%3%^%s%I **splot** $O!"Dj?t$N Z CM$KBP$9$kEy9b@~$r7W;;$7IA2h$9$k$3$H$b$G$-$^$9!#$3$l$i$NEy9b@~$O!"6JLL$=$l<+BN$N>e$K=q$/$3$H$b$G$-$^$9$7!"XY J?LL$X<M1F$9$k$3$H$b$G$-$^$9!#0J2<;2>H: **set contour (p. 122)**!#

## 2 <!85<M1F (set view map)



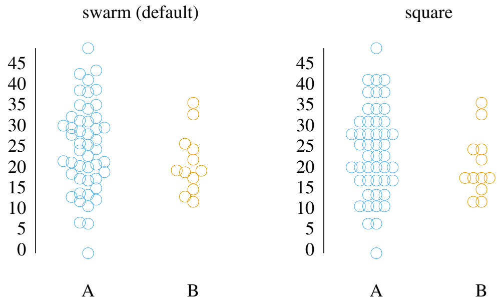
%3%^%s%I **splot** $NFCJL$J>19g$H$7$F!"IA2h$N Z J}8~$N<M1F$K$h$k!"Z :BI8$N 2 <!856JLL$X$NCO?^:n@.(map) $,$"$j$^$9!#0J2<;2>H: **set view map (p. 182)**!#$3$NIA2h%b!<%I$O!"Ey9b@~$NIA2h$d2 9EYJ,I[$r@8@.$9$k$N$KMxMQ$G$-$^$9!#$3$N?^$OIA2h%9%?%$%k **lines** $r0lEY!"**labels** $r0lEYIA2h$7$?Ey9b@~$r<($7$F$$$^$9 (LuCm ?^$,I=<($5$l$F$$$k>19g)!#

## 6K:BI8IA2h (Polar plots)



6K:BI8IA2h (polar) $O!"plot %3%^%s%I$rF~NO$9$kA0$K8=:_$N:BI87O$r6K:BI8$KJQ99$9$9$k$3$H$K$h$C$F@8@.$7$^$9!#%*%W%7%g%s **set polar** $O!"F~NO$9$k2<!85:BI8$r<x>,<y> $NBe$o$j$K< 3Q>,< H>7B> $H2r<a$9$k$3$H$r gnuplot $K;X<($7$^$9!#$9$Y$F$G$O$J$$$G$9$,!"B?$/$N 2<!85IA2h%9%?%$%k$,6K:BI8%b!<%I$G$b5!G=$7$^$9!#?^$O!"IA2h%9%?%$%k **lines** $H **filledcurves** $NAH$_9g$o$;$r<($7$F$$$^$9!#(LuCm ?^$,I=<($5$l$F$$$k>19g) 0J2<;2>H: **set polar (p. 166), set rrange (p. 168), set size square (p. 169), set theta (p. 178), set ttics (p. 181)**!#

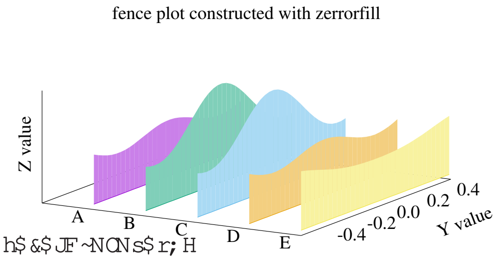
## %S!<%9%&%)!<%`IA2h (Bee swarm plots)




%S!<%9%&%)!<%`(bee swarm) %0%i%U$O!"MI$i$.(jitter) $rE,MQ$7$F=EJ#E@$rJ,N%$9$k$3$H$K$h$jF@$i$l$k7k2L$G$9!#$=$NE57?E*$JNc$O!"3FE@$Kx :BI8$r7hDj$9$k2 $D0J>e$N%+%F%4%j$K$h$C$FI=$o$5$l$ky $NCM$NJ,I[$NHf3S$G$9!#=E$J$j$NH=Dj4p=`$d!"jitter $G;HMQ$9$k0\F0%Q%?!<%s$r@)8f$9$kJ}K!$K4X$7$F$O!"0J2<;2>H: **set jitter (p. 137)**!#$3$N?^$N%0%i%U$O!"0[$J$k jitter $N@_Dj$KBP$9$kF1$8 plot %3%^%s%I$K$h$C$F:n$i$l$?$b$N$G$9!#

```
‘plot $data using 1:2:1 lc variable‘
```

## :t%0%i%U (Fence plots)




:t%0%i%U (fence plot) $O!"U#?t$N2<!85%0%i%U$r!"$=$NY :BI8$OB7$(!"$=$l$>$l$r6hJL$9$k$?$a$K X $K1h$C$F$O$:$i$7$?7A$G7k9g$7$?$b$N$G$9!#EZB f$NCM$+$i8D!9$N%0%i%U$NZ :BI8$^$G$N4V$NNN0h$rEI$jDY$9$3$H$G!"Y J}8~$N@0Ns$HZ :BI8$N9b$5$N0c$$$N8+$?L\$r6/D4$7$^$9!#gnuplot $G$3$N7A<0$N%0%i%U$r=q$/$K$O$$/$D$+$NJ}K!$,$"$j$^$9!#:G$bC1=c$J$N$O!"5 Ns$N7A<0$N **zerrorfill** %9%?%$%k$rMxMQ$9$kJ}K!$G$9!#i $GE:;z2=$5$l$?J#?t$N6J@~z = Fi(y) $,$"$k$H$-!"‘splot with zerrorfill‘ $G0J2<$N$h$&$JF~NONs$r;H$(

$($P:t%0%i%U$r=q$/$3$H$,$G$-$^$9:

```
i y z_base z_base Fi(y)
```

# Part III

# %3%^%s%I (Commands)

$3$N%;%/%7%g%s$G$O **gnuplot** $,<u$1IU$1$k%3%^%s%I$r%"%k%U%!%Y%C%H=g$KJB$Y$F$$$^$9!#$3$N%I%-%e%a%s%H$r; f$K0u:~$7$?$b$N$OA4$F$N%3%^%s%I$r4^$s$G$$$^$9$,!"BPOC7?$G; 2>H$G$-$k%I%-%e%a%s%H$NJ}$O4 0A4$G$O$J$$2DG=@-$,$"$j$^$9!#<B:]!"$3$N8+=P$7$N2<$K2?$N%3%^%s%I$bI=<($5$l$J$$%7%9%F%`$,$"$j$^$9!#

$[$H$s$I$N>l9g!"%3%^%s%IL>$H$=$N%*%W%7%g%s$O!"J6$i$o$7$/$J$$$HO0O$G>JN,$9$k$3$H$,2DG=$G$9!#$9$J$o$A!" **"plot f(x) with lines"** $NBe$o$j$K"**p f(x) w li**" $H$9$k$3$H$,$G$-$^$9!#

=q<0$N5-=R$K$*$$$F!"Cf%+%C%3 ({}) $OD I2C; XD j$G$-$k0z?t$r0UL#$7!"=DK@ (|) $O8_$$$KGSB>E*$J0z?t$r6h@Z$k$b$N$H$7$^$9!#

# Break

%3%^%s%I **break** $O!"**do**, **while** J8$N7+$jJV$7<B9TItJ,$N%+%C%3Fb$G$N$_0UL#$r; }$A$^$9!#$3$N%3%^%s%I$O!"$=$NCf%+%C%3Fb$N; D$j$NL?Na$r%9%-%C%W$7!"7+$jJV$7$rCfCG$7!"$=$NJD$8%+%C%3$N<!$NJ8$+$i<B9T$r:F3+$7$^$9!#0J2<$b; 2>H: **continue (p. 74)**!#

# Cd

**cd** %3%^%s%I$O%+%l%s%H%G%#%l%/%H%j$rJQ99$7$^$9!#

=q<0:

```
        cd '<%G%#%l%/%H%jL>>'
```

%G%#%l%/%H%jL>$O0zMQId$K0O$^$l$F$$$J$1$l$P$J$j$^$;$s!#

Nc:

```
        cd 'subdir'
        cd '..'
```

%P%C%/%9%i%C%7%e (\) $OFs=E0zMQIdFb (") $G$OFCJL$J0UL#$r; }$C$F$7$^$&$?$a$K% (%9%1!<%W$9$kI,MW$,$"$j$^$9$N$G!"Windows %f!<%6$K$OC10l0zMQId$r; H$&$3$H$r4+$a$^$9!#Nc$($P!"

```
        cd "c:\newdata"
```

$G$O<:GT$7$^$9$,!"

```
        cd 'c:\newdata'
        cd "c:\\newdata"
```

$J$i4|BTDL$j$KF0$/$G$7$g$&!#

# Call

**call** %3%^%s%I$O!"FI$_9~$`%U%!%$%kL>$N8e$m$K!"9 $D$^$G$N%Q%i%a!<%?$rM?$($k$3$H$,$G$-$k$3$H$r=|$1$P **load** %3%^%s%I$HEy2A$G$9!#

```
    call "inputfile" <param-1> <param-2> <param-3> ... <param-9>
```

gnuplot $N0JA0$N%P!<%8%g%s$G$O!"$=$N%Q%i%a!<%?J8; zNs$NFbMF$r!"FCJL$J5-9f $0, $1, ..., $9 $r%^%/%m$N$h$&$KCV49$9$9$k$3$H$GI=8=$7$F$$$^$7$?!#$3$N; EAH$_$O!"8=:_$OHs?d>)$G$9 (0J2<; 2>H: **call old-style (p. 73)**)!#

8=:_$N gnuplot $O!"J8; zNsJQ?t ARG0, ARG1, ..., ARG9 $H!"@0?tJQ?t ARGC $rDs6!$7$^$9!#**call** %3%^%s%I$r<B9T$9$k$H!"ARG0 $K$OF~NO%U%!%$%kL>$,!"ARGC $K$O%Q%i%a!<%??t$,@_Dj$5$l!"ARG1 $+$i ARG9 $K$O%3%^%s%I%i%$%s$KJB$Y$i$l$?%Q%i%a!<%?$NCM$,FI$_9~$^$l$^$9!#

DL>o%Q%i%a!<%?$OJ8; zNsCM$H$7$FJ]B8$5$l$k$N$G!"$=$l$r%^%/%mE83+$7$F; 2>H$9$k$3$H$b$G$-$^$9 (8E$$7A<0$N=q<0$NN`; w)!#$7$+$7!"B?$/$N>l9g!"$=$l$i$OB>$NJQ?t$HF1MM$KMxMQ$9$kJ}$,$h$j<+A3$G$7$g$&!#

### Nc (Example)

```
0J2<$r call $9$k$H:
    MYFILE = "script1.gp"
    FUNC = "sin(x)"
    call MYFILE FUNC 1.23 "This is a plot title"
8F$S=P$5$1$?%9%/%j%W%HFb$G$O0J2<$N$h$&$K$J$j:
    ARG0 $O "script1.gp"
    ARG1 $OJ8;zNsCM "sin(x)"
    ARG2 $OJ8;zNsCM "1.23"
    ARG3 $OJ8;zNsCM "This is a plot title"
    ARGC $O 3
$=$N%9%/%j%W%HFb$G$O0J2<$N$h$&$J$b$N$r<B9T$G$-$k:
    plot @ARG1 with lines title ARG3
    print ARG2 * 4.56, @ARG2 * 4.56
    print "This plot produced by script ", ARG0
```

$3$NNc$N ARG1 $O%^%/%m$H$7$F;2>H$7$J$1$l$P$$$1$^$;$s$,!"ARG2 $O%^%/%m;2>H$G$b (?tCMDj?t$K$J$k)!" JQ?t$N$^$^$G$b (J8;zNs "1.23" $,<B?tCM$K<+F0E*$KJQ49$5$1$?8e$NF1$8?tCM$K$J$k) 9=$o$J$$$3$H$KCm0U$7$F $/$@$5$$!#

%7%'%k%9%/%j%W%H$G gnuplot $r%3%^%s%I%i%$%s%*%W%7%g%s **-c** $D$-$G<B9T$9$k$3$H$G!"$3$l$HF1$8$3$H$rD>@\ 9T$&$3$H$b$G$-$^$9:

```
gnuplot -persist -c "script1.gp" "sin(x)" 1.23 "This is a plot title"
```

## Old-style

0J2<$O!"8E$$%P!<%8%g%s$N gnuplot $G;H$o$l$F$$$? call $N;EAH$_$N5-=R$G$9$,!"8=:_$OHs?d>)$G$9!#

```
call "<input-file>" <param-0> <param-1> ... <param-9>
```

F~NO%U%!%$%kL>$O0zMQId$G0O$^$J$1$l$P$J$j$^$;$s!#F~NO%U%!%$%k$N3F9T$rFI$_9~$`:]$K!"0J2<$NFCJL$JJ8;zNs$rAv::$7$^$9: $0 $1 $2 $3 $4 $5 $6 $7 $8 $9 $#!#$=$l$,8+$D$+$C$?$i!"V$+?t;z!W$NNs$O **call** %3%^%s%I%i%$%s$NBP1~$9$k%Q%i%a!<%?$KCV$-49$($^$9!#0zMQId$O%3%T!<$;$:!"J8;zNsJQ?tCV49$O9T$$$^$;$s!#J8;zNs $# $O%Q%i%a!<%??t$KCV$-49$($^$9!#$=$NB>$NJ8;z$,8e$m$K$D$$$F$$$k $ $O!"% (%9%1!<%W%7!<%1%s%9$H$7$F=hM}$7 $^$9!#Nc$($P 1 8D $N $ $r;H$&$K$O $$ $H$7$^$9!#

Nc:

%U%!%$%k 'calltest.gp' $O0J2<$N9T$r4^$s$G$$$k$H$9$k$H:

```
print "argc=$# p0=$0 p1=$1 p2=$2 p3=$3 p4=$4 p5=$5 p6=$6 p7=x$7x"
```

<!$N9T$rF~NO$9$k$H:

```
call 'calltest.gp' "abcd" 1.2 + "'quoted'" -- "$2"
```

0J2<$N$h$&$KI=<($5$l$k$G$7$g$&:

```
argc=7 p0=abcd p1=1.2 p2=+ p3='quoted' p4=- p5=- p6=$2 p7=xx
```

Cm0U: J8;z $ $O!"gnuplot <+?H$N%G!<%?NsMQ$N=q<0$H$V$D$+$j$^$9$7!"Unix 7O$N%7%'%k$N4D6-JQ?t$r;2>H$9$k $ $H$b$V$D$+$j$^$9!#FCJL$JJ8;zNs$# $O!"gnuplot $N%P!<%8%g%s 4.5 $+$i 4.6.3 $^$G$O!"4V0c$($F%3%a%s%H J8;zNs$N6h@Z$jJ8;z$H$7$F2r<a$5$l$F$$$^$7$?!#J8;zNsCV49$G$O0zMQId$OL5;k$5$l$k$N$G!"J8;zNsDj?t$O4JC1 $K2u$l$F$7$^$$$^$9!#

# Clear

**clear** %3%^%s%I$O!"**set terminal** $d **set output** $GA*Br$7$?2hLL!"=PNOAuCV$r%/%j%"$7$^$9!#%O!<%I%3%T!< AuCV$KBP$7$F$ODL>o2~%Z!<%8$r9T$$$^$9!#

$$/$D$+$N=PNOAuCV$O **clear** %3%^%s%I$G$O **set size** $GDj5A$5$l$?IA2hNN0h$N$_$r>C5n$7$^$9!#$=$N$?$a!"**set multiplot** $H$H$b$K;HMQ$9$k$3$H$GA^F~?^$r0l$D:n$k$3$H$,$G$-$^$9!#

Nc:

```
set multiplot
plot sin(x)
set origin 0.5,0.5
set size 0.4,0.4
clear
plot cos(x)
unset multiplot
```

>\:Y$K$D$$$F$O!"0J2<;2>H: **set multiplot (p. 150)**, **set size (p. 169)**, **set origin (p. 156)**!#

# Continue

%3%^%s%I **continue** $O!"**do**, **while** J8$N7+$jJV$7<B9TIItJ,$N%+%C%3Fb$G$N$_0UL#$r;}$A$^$9!#$3$N%3%^%s%I$O!"$=$NCf%+%C%3Fb$N;D$j$NL?Na$r%9%-%C%W$7!"<!$N7+$jJV$7$K?J$_$^$9($b$7%k!<%W$N;D$j$,$"$l$P)!#0J2<$b;2>H: **break (p. 72)**!#

# Do

=q<0:

```
do for <iteration-spec> {
     <commands>
     <commands>
}
```

$3$l$O!"%3%^%s%INs$rJ#?t2s<B9T$7$^$9!#%3%^%s%I$OCf%+%C%3{} $G0O$_!"$+$D3+;O%+%C%3"{" $O!"%-!<%o!<%I **do** $HF1$89T$KCV$/I,MW$,$"$j$^$9!#$3$N%3%^%s%I$O!"8E$$7A<0($+$C$3$J$7) $N if/else 9=J8$H0l=o$K;H$&$3$H$O$G$-$^$;$s!#7+$jJV$7;XDj <iteration-spec> $NNc$K$D$$$F$O!"0J2<;2>H: **iteration (p. 40)**!#Nc:

```
set multiplot layout 2,2
do for [name in "A B C D"] {
    filename = name . ".dat"
    set title sprintf("Condition %s",name)
    plot filename title name
}
unset multiplot
```

0J2<$b;2>H: **while (p. 203)**, **continue (p. 74)**, **break (p. 72)**!#

# Evaluate

%3%^%s%I **evaluate** $O!"0z?tJ8;zNs$H$7$FM?$($i$l$?%3%^%s%I$r<B9T$7$^$9!#$=$NJ8;zNsCf$K2~9TJ8;z$rF~$l$F$O$$$1$^$;$s!#

=q<0:

```
eval <string expression>
```

$3$l$O!"FC$KF1MM$N%3%^%s%I$N7+$jJV$7$KM-MQ$G$9!#

Nc:

```
set_label(x, y, text) \
  = sprintf("set label '%s' at %f, %f point pt 5", text, x, y)
eval set_label(1., 1., 'one/one')
eval set_label(2., 1., 'two/one')
eval set_label(1., 2., 'one/two')
```

J8;zNs$+$i%3%^%s%I$r<B9T$9$kJL$NJ}K!$K4X$7$F$O!"0J2<;2>H: **substitution macros (p. 48)**!#

# Exit

```
exit
exit message "%(%i!<%a%C%;!<%8J8;zNs"
exit status <@0?t$N%(%i!<%3!<%D>
```

**exit** $H **quit** $NN>%3%^%s%I$O END-OF-FILE J8;z (DL>o Ctrl-D) F1MM!"8=:_$NF~NO%9%H%j!<%`!"$9$J$o$AC<Kv$NBPOC$d%Q%$%WF~NO!"%U%!%$%kF~NO(%Q%$%W) $+$i$NF~NO$r=*N;$5$;$^$9!#F~NO%9%H%j!<%`$,F~$l;R(3,AXE*$J**load** $N%9%/%j%W%H$G) $K$J$C$F$$$k>l9g!"FI$_9~$_$O?F$N%9%H%j!<%`$G7QB3$5$l$^$9!#%H%C%W%l%Y%k$N%9%H%j!<%`$,JD$8$i$l$k$H!"%W%m%0%i%`$O$=$l<+?H=*N;$7$^$9!#

%3%^%s%I **exit gnuplot** $O!"D>$A$K!"L5>r7o$K!"$=$7$FNc$(F~NO%9%H%j!<%`$,B?CJ3,$K%M%9%H$5$l$F$$$F$b!"gnuplot $r=*N;$5$;$^$9!#$=$N>l9g!"3+$+$l$F$$$?A4$F$N=PNO%U%!%$%k$O$-$l$$$K4OA4$J7A$G$OJD$8$i$l$J$$2DG=@-$,$"$j$^$9!#;HMQNc:

```
bind "ctrl-x" "unset output; exit gnuplot"
```

%3%^%s%I **exit error "error message"** $O!"5?;w%W%m%0%i%`%(%i!<$r9T$$$^$9!#BPOC7?%b!<%I$G$O!"$=$N%(%i!<%a%C%;!<%8$rI=<($7!"$9$Y$N%M%9%H$5$l$?%k!<%W$d call $rCfCG$7$F%3%^%s%I%i%$%s$K5"$j$^$9!#HsBPOC7?%b!<%I$G$O!"%W%m%0%i%`$r=*N;$7$^$9!#

gnuplot $,=*N;$7%7%'%k$N@)8f$KLa$k>l9g!"$=$NJV$jCM$O0UL#$N$J$$$b$N$K$J$k$3$H$,$"$j$^$9$,!"$3$N%3%^%s%I$r0J2<$N$h$&$K<B9T$9$l$P!"%7%'%k$KFCDj$NCM$rJV$9$3$H$,2DG=$G$9!#

```
exit status <value>
```

>\:Y$O!"0J2<;2>H: **batch/interactive (p. 24)**!#

# Fit

%3%^%s%I **fit** $O!"Marquardt-Levenberg K!$K$h$kHs@~7A:G>.<+>hK! (NLLS) $rMQ$$$F!"%G!<%?E@$N=89g$K%f!<%6$,M?$($k<0$rEv$F$O$a$^$9!#FHN)JQ?t$O12 $^$G5v$5$l$F$$$F!"=>B0JQ?t$O>o$K1 $D$G!"G$0U8D?t$N%Q%i%a!<%?$rEv$F$O$a$k$3$H$,$G$-$^$9!#$5$i$KDI2C$G!"%G!<%?E@$N=E$_IU$1MQ$K8m:9I>2A$rF~NO$9$k$3$H$b2DG=$G$9!#

**fit** $N:G$b4pK\E*$J;HMQK!$O!"0J2<$NC1=c$JNc$,<($7$F$$$^$9:

```
f(x) = a + b*x + c*x**2
fit f(x) 'measured.dat' using 1:2 via a,b,c
plot 'measured.dat' u 1:2, f(x)
```

=q<0:

```
fit {<ranges>} <expression>
    '<datafile>' {datafile-modifiers}
    {{unitweights} | {y|xy|z}error | errors <var1>{,<var2>,...}}
    via '<parameter file>' | <var1>{,<var2>,...}
```

HO0O (xrange, yrange Ey) $O!"Ev$F$O$a$K;HMQ$9$k%G!<%?$r@)8B$9$kL\E*$G;H$&$3$H$,$G$-!"$=$NHO0O$rD6$($?%G!<%?$OL5;k$7$^$9!#$=$N=q<0$O **plot** %3%^%s%IF1MM

```
[{dummy_variable=}{<min>}{:<max>}],
```

$G$9!#0J2<;2>H: **plot ranges (p. 102)**!#

<expression> $O!"DL>o$O$"$i$+$8$a%f!<%6Dj5A$5$l$?f(x) $^$?$Of(x,y) $N7A$N4X?t$G$9$,!"**gnuplot** $GM-8z$J$I$s$J?t<0$G$b;XDj$G$-$^$9!#$?$@$7<B?tCM4X?t$G$J$1$l$P$$$1$^$;$s!#FHN)JQ?t$NL>A0$O!"%3%^%s%I **set dummy** $G@_Dj$9$k$+!"fit $NHO0O;XDjItJ, (<rangse>) $G@_Dj$7$^$9(0J2<$r;2>H)!#%G%U%)%k%H$G$O!":G=i$N2 $D$Ox, y $H$J$j$^$9!#$5$i$K!"$=$N?t<0$O!"Ev$F$O$a$N:n6H$K$h$j7hDj$9$kCM$r;}$D1 $D0J>e$NJQ?t(%Q%i%a!<%?) $K0MB8$9$Y$-$G$9!#

<datafile> $O **plot** %3%^%s%I$HF1MM$K07$o$l$^$9!#**plot datafile** $N=$>~;R(**using**, **every**,...) $O!"**smooth** $r=|$$$F!"A4$F **fit** $K;H$&$3$H$,$G$-$^$9!#0J2<;2>H:**plot datafile (p. 91)**!#

%G!<%?%U%!%$%k$NFbMF$O!"plot %3%^%s%I$K;HMQ$9$k$N$HF1$8 **using** ;XDj$r;H$&$3$H$G=@Fp$K2r<a$5$;$k$3$H$,$G$-$^$9!#Nc$($P!"FHN)JQ?t x $r2 NsL\$H3 NsL\$NOB$H$7$F@8@.$7!"z $NCM$r6 NsL\$+$i<h$j!"=E$_$r1 $H$7$?$$>l9g$O0J2<$N$h$&$K$7$^$9:

```
fit ... using ($2+$3):6
```

**using** ;XDj$,$J$$>l9g!"fit $O0EL[$KFHN)JQ?t$O1 $D$@$1$H2>Dj$7$^$9!#%U%!%$%k<+?H!"$^$?$O using ;XDj$, 1 Ns$@$1$N%G!<%?$r;}$D>l9g!"$=$N9THV9f$rFHN)JQ?tCM$H$7$F;HMQ$7$^$9!#**using** ;XDj$rM?$($?>l9g!":GBg12 8D(;XDj$7$F%3%s%Q%$%k$7$F$$$l$P$5$i$K$=$l0J>e) $NFHN)JQ?t$rMxMQ$G$-$^$9!#

%*%W%7%g%s **unitweights** ($3$l$,%G%U%)%k%H) $O!"$9$Y$F$N%G!<%?E@$,Ey$7$$=E$_$r;}$D$H$_$J$7$^$9!#$3$l $O!"%-!<%o!<%I **error** $r;HMQ$9$k$3$H$GJQ99$G$-!"$3$l$O%G!<%?%U%!%$%k$+$i1 $D0J>e$NJQ?t$N8m:9I>2A$r FI$_9~$_!"$=$N8m:9I>2A$rBP1~$9$kJQ?tCM$NI8=`JP:9s $H$_$J$7!"3F%G!<%?$K1/s**2 $N=E$_$r7W;;$9$k$N$K ;HMQ$7$^$9!#

FHN)JQ?t$N8m:9I>2A$K$*$$$F!"$=$N=E$_$K$O!""'M-8zJ,;6K!" (effective variance method; Jay Orear, Am. J. Phys., Vol. 50, 1982) $K=>$C$F!"$5$i$KEv$F$O$a4X?t$NHyJ,78?t$r$+$1$^$9!#

%-!<%o!<%I **errors** $K$O!"$=$N8e$m$K!"F~NO$,$I$NJQ?t$N8m:9$G$"$k$N$+$r<($9%3%s%^6h@Z$j$N1 $D0J>e$NJQ ?tL>$N%j%9%H$,IU$-$^$9!#=>B0JQ?t z $O>o$K$=$NCf$K$J$1$l$P$$$1$^$;$s$,!"FHN)JQ?t$OI,?\$G$O$"$j$^$;$s!# $=$N%j%9%H$N3FJQ?t$KBP$7!"%U%!%$%k$+$i$=$NJ,$N!"3FJQ?t$N8m:9I>2A$r;}$DDI2C$NNs$rFI$_9~$_$^$9!#7+$j JV$7$K$J$j$^$9$,!"**using** ;XDj$K$h$j=@Fp$J2r<a$,2DG=$K$J$j$^$9!#$h$C$F!"FHN)JQ?t$N?t$O0EL[$K!"**using** ;XDjFb$NNs$N?t$+$i1 $r0z$$$F(=>B0JQ?tJ,)!"$5$i$K**errors** ;XDjFb$NJQ?t$N8D?t$r0z$$$??t$K$J$k$3$H$KCm 0U$7$F$/$@$5$$!#

Nc$H$7$F!"2 $D$NFHN)JQ?t$,$"$j!"$=$7$F1 $DL\$NFHN)JQ?t$H=>B0JQ?t$N8m:9%G!<%?$,$"$k>l9g$O!"**errors x,z** ;XDj$H5 Ns$N**using** ;XDj$r;H$&$3$H$K$J$j$^$9$,!"$=$l$O x:y:z:sx:sz $N$h$&$K2r<a$5$l$^$9 (x, y $OFH N)JQ?t!"z $,=>B0JQ?t!"sx, sz $O x, z $NI8=`JP:9)!#

**errors** ;XDj$N$A$g$C$H$7$?N,5-K!$b2,3 MQ0U$5$l$F$$$^$9: **yerrors** (FHN)JQ?t$,1 Ns$"$kEv$F$O$aMQ)!"**zerrors** ($h$j0lHL$N>l9g) $O!"$$$:$l$b**errors z** $HF1CM$G!"1 Ns$@$1DI2C$N=>B0JQ?tMQ$N8m:9Ns$,$"$k$3$H$r0UL#$7 $F$$$^$9!#

**xyerrors** $O!"FHN)JQ?t$O1 Ns$G!"$=$NFHN)JQ?t$H=>B0JQ?t$NN>J}$N2 Ns$N8m:9Ns$,DI2C$5$l$k$3$H$r0UL#$7 $^$9!#$3$N>l9g!"x $H y $N8m:9$O Orear $NM-8zJ,;6K! (effective variance method) $G=hM}$5$l$^$9!#

**yerror** $H **xyerror** $N7A<0$*$h$S2r<a$O!"$=$l$>$l2 <!85IA2h%9%?%$%k$N **yerrorlines** $H **xyerrorlines** $K F1Ey$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

%3%^%s%I **set fit v4** $r;HMQ$9$k$H!"fit $N%3%^%s%I=q<0$O **gnuplot** %P!<%8%g%s 4 0JA0$H8_49$N=q<0$K$J$j$^ $9!#$=$N>l9g!"**using** $K$O!"FHN)JQ?t$,2 $D0J>e$J$i$P!"FHN)JQ?t$N?t$h$j2 $D (z $H s) B?$$;XDj$,I,MW$G!" **gnuplot** $O!"**using** ;XDj$GM?$($i$l$?Ns$N?t$K1~$8$F!"0J2<$N=q<0$K=>$$$^$9:

```
z                         # FHN)JQ?t$O 1 $D (9THV9f)
x:z                       # FHN)JQ?t$O 1 $D (Bh 1 Ns)
x:z:s                     # FHN)JQ?t$O 1 $D (A4It$G 3 Ns)
x:y:z:s                   # FHN)JQ?t$O 2 $D (A4It$G 4 Ns)
x1:x2:x3:z:s              # FHN)JQ?t$O 3 $D (A4It$G 5 Ns)
x1:x2:x3:...:xN:z:s       # FHN)JQ?t$O N 8D (A4It$G N+2 Ns)
```

$3$l$O!"2 $D0J>e$NFHN)JQ?t$G fit $r$9$k>l9g!"z-8m:9s $rM?$($kI,MW$,$"$k$3$H$r0UL#$9$k$3$H$KCm0U$7$F $/$@$5$$!#=E$_$r1 $K$7$?$$>l9g$O!"$=$l$r!"Nc$($P x:y:z:(1) $N$h$&$J=q<0$r using $K;XDj$9$k$3$H$GL@<( E*$KM?$($kI,MW$,$"$j$^$9!#

2>JQ?tL>$O!"2<$G>R2p$9$k$h$&$KHO0O;XDj$G;XDj$9$k$3$H$GJQ99$G$-$^$9!#:G=i$NHO0O$O **using** ;XDj$N:G=i$N $b$N$KBP1~$7!"0J2<F1MM$G$9!#=>B0JQ?t$G$"$k z $NHO0O;XDj$b$G$-$^$9$,!"$=$l$O!"f(x,...) $NCM$r$=$NHO0O30 $K$7$F$7$^$&$h$&$J%G!<%?E@$,!";D:9$r:G>.2=$9$k$3$H$K$O4sM?$7$J$$>l9g$KM-8z$G$9!#

J#?t$N%G!<%?=89g$bJ#?t$N1 JQ?t4X?t$KF1;~$KEv$F$O$a$k$3$H$b!"y $r'2>JQ?t' $H$9$l$P2DG=$G$9!#Nc$($P %G!<%?9THV9f$r;H$$!"2 JQ?t4X?t$X$NEv$F$O$a!"$H$9$l$P$$$$$G$7$g$&!#0J2<;2>H: **fit multi-branch (p. 81)**!#

**via** ;XDj;R$O!"%Q%i%a!<%?$N:GE,2=$r!"D>@\9T$&$+!"$^$?$O%Q%i%a!<%?%U%!%$%k$r;2>H$9$k$3$H$K$h$C$F9T$& $+$r;XDj$7$^$9!#

Nc:

```
f(x) = a*x**2 + b*x + c
g(x,y) = a*x**2 + b*y**2 + c*x*y
set fit limit 1e-6
fit f(x) 'measured.dat' via 'start.par'
fit f(x) 'measured.dat' using 3:($7-5) via 'start.par'
fit f(x) './data/trash.dat' using 1:2:3 yerror via a, b, c
fit g(x,y) 'surface.dat' using 1:2:3 via a, b, c
fit a0 + a1*x/(1 + a2*x/(1 + a3*x)) 'measured.dat' via a0,a1,a2,a3
fit a*x + b*y 'surface.dat' using 1:2:3 via a,b
fit [*:*][yaks=*:*] a*x+b*yaks 'surface.dat' u 1:2:3 via a,b

fit [][][t=*:*] a*x + b*y + c*t 'foo.dat' using 1:2:3:4 via a,b,c

set dummy x1, x2, x3, x4, x5
h(x1,x2,x3,x4,s5) = a*x1 + b*x2 + c*x3 + d*x4 + e*x5
fit h(x1,x2,x3,x4,x5) 'foo.dat' using 1:2:3:4:5:6 via a,b,c,d,e
```

H?I |$N8D! 9$N% 9%F%C%W$N8e$G! "Ev$F$O$a$N8=:_$N>uBV$K$D$$$F$N>\:Y$J>pJs$,2hLL$KI=<($5$1$^$9! #$=$7:G=i $H:G8e$N>uBV$K4X$9$kF1$8>pJs$, "fit.log" $H$$$&m%0%U%!%$%k$K$b=q$-=P$5$1$^$9! #$3$N%U%!%$%k$OA0$NEv$F $O$a$NMzNr$r>C$5$J$$$h$&$K>o$KDI2C$5$1$F$$-$^$9! #$3$1$OK>$ `$J$i: o= |! "$"$k$$$OJL$JL>A0$K$G$-$^$9! # %3%^%s%I **set fit logfile** $r; H$C$F%m%0%U%!%$%k$NL>A0$rJQ99$9$k$3$H$b$G$-$^$9! #

**set fit errorvariables** $r; HMQ$7$?>l9g! "3FEv$F$O$a%Q%i%a! <%?$N8m:9$O$=$N%Q%i%a! <%?$H; w$?L>A0 ("_err" $, DI2C$5$1$?L>A0) $NJQ?t$KJ]B8$5$1$^$9! $N$G! "$=$N8m:9$r$=$N8e$N7W; ;$NF~NO$H$7$F; HMQ$9$k$3$H$,$G$-$^$9! #

**set fit prescale** $H$7$?>l9g! "Ev$F$O$a%Q%i%a! <%?$r! "$=$1$i$N=i4 |CM$+$i%9%1! <%kJQ49$7$^$9! #$3$1$K$h$j! " 8D! 9$N%Q%i%a! <%?$NBg$-$5$K$+$J$j0c$$$,$"$k$h$&$J>l9g$G$b! "Marquardt-Levenberg %k! <%A%s$,$h$jAa$/! " $h$j? .Mj@-$N$"$kCM$K<}B+$5$;$i$1$k$h$&$K$J$j$^$9! #

Ev$F$O$a$NH?I |$O Ctrl-C (wgnuplot $G$O Ctrl-Break) $r2 !$9$3$H$GCfCG$G$-$^$9! #8=:_$NH?I |$,@5>o$K=*N;$7 $?8e! "0J2<$N$$:$1$+$rA*$V$3$H$,$G$-$^$9:(1) Ev$F$O$a$r;_$a$F8=:_$N%Q%i%a! <%?$NCM$r:NMQ$9$k (2) Ev$F $O$a$rB39T$9$k (3) **set fit script** $+! "4D6-JQ?t **FIT_SCRIPT** $G; XDj$7$? **gnuplot** %3%^%s%I$r<B9T$9$k! # $=$N%G%U%)%k%H$O **replot** $G! "$b$7%G! <%?$HEv$F$O$a4X?t$r0l$D$N%0%i%U$K$"$i$+$8$aIA2h$7$F$"$1$P! "8=:_ $NEv$F$O$a$N>uBV$rI=<($9$k$3$H$,$G$-$^$9! #

**fit** $,=*N;$7$?8e$O! ":G8e$N%Q%i%a! <%?$NCM$rJ]B8$9$k$N$K **save fit** %3%^%s%I$r; H$$$^$9! #$=$NCM$O:F$S%Q%i %a! <%?$NCM$H$7$F; H$&$3$H$,$G$-$^$9! #>\:Y$O! "0J2<; 2>H **save fit (p. 111)** ! #

## %Q%i%a! <%?$ND4@0 (adjustable parameters)

**via** $O%Q%i%a! <%?$rD4@a$9$k$?$a$N2 $D$NJ}K!$r; XDj$G$-$^$9! #0l$D$O%3%^%s%I%i%$%s$+$iD>@\; X<($9$k$b$N $G! "$b$&0l$D$O%Q%i%a! <%?%U%!%$%k$r; 2>H$7$F4V@\E*$K9T$&$b$N$G$9! #$3$N2 $D$O=i4 |CM$N@_Dj$G0c$C$?J}K! $r<h$j$^$9! #

D4@0$9$k%Q%i%a! <%?$O! "**via** %-! <%o! <%I$N8e$m$K%3%s%^$G6h@Z$i$1$?JQ?tL>$N%j%9%H$r=q$/$3$H$G; XDj$G$-$^ $9! #Dj5A$5$1$F$$$J$$JQ?t$O=i4 |CM 1.0 $H$7$F:n$i$1$^$9! #$7$+$7Ev$F$O$a$O! "JQ?t$N=i4 |CM$,$"$i$+$8$aE, @Z$JCM$K@_Dj$5$1$F$$$kJ}$,B?J,B.$/<}B+$9$k$G$7$g$&! #

%Q%i%a! <%?%U%!%$%k$O8D! 9$N%Q%i%a! <%?$r! "8DJL$K 1 9T$K0l$D$:$D! "=i4 |CM$r<!$N$h$&$J7A$G; XDj$7$F=q$- $^$9! #

```
JQ?tL> = =i4 |CM
```

'#' $G; O$^$k%3%a%s%H9T$d6u9T$b5v$5$1$^$9! #FCJL$J7A<0$H$7$F

```
JQ?tL> = =i4 |CM       # FIXED
```

$O! "$3$NJQ?t$,8GDj$5$1$?%Q%i%a! <%?$G$"$k$3$H$r0UL#$7! "$=$1$O3$N%U%!%$%k$G=i4 |2=$5$1$^$9$,! "D4@a$O $5$1$^$;$s! #$3$1$O! "**fit** $G%1$]! <%H$5$1$kJQ?t$NCf$G! "$I$1$,8GDj$5$1$?JQ?t$G$"$k$+$rL@<($9$k$N$KM-MQ$G $7$g$&! #$J$*! "**# FIXED** $H8@$&%-! <%o! <%I$O8 7L)$K$3$N7A$G$J$/$F$O$J$j$^$;$s! #

## Fit $N3 5N, (fit beginners_guide)

**fit** $O! "M?$($i$1$?%G! <%?E@$rM?$($i$1$?%f! <%6Dj5A4X?t$K$b$C$H$bNI$/Ev$F$O$a$k$h$&$J%Q%i%a! <%?$r8+$D$1$k $N$K; H$o$1$^$9! #$=$NEv$F$O$a$O! "F1$8>l=j$G$NF~NO%G! <%?E@$H4X?tCM$H$N<+>h8m:9! "$"$k$$$O; D:9 (SSR:Sum of the Squared Residuals) $NOB$r4p$KH=Dj$5$1$^$9! #$3$NNL$ODI>o&V(%+$) <+>h$H8F$P$1$^$9! #$3$N%"%k%4%j %:% `$O SSR $r :G>.2=$9$k$3$H$r$7$h$&$H$7$^$9! #$b$&>/$7>\$7$/8@$&$H! "%G! <%?8m:9 ($^$?$O 1.0) $N=E$_$D $-; D:9$N<+>hOB (WSSR) $N:G>.2=$r9T$C$F$$$^$9! #>\:Y$O! "0J2<; 2>H **fit error_estimates (p. 78)** ! #

$3$1$,!"(Hs@~7A) :G>.<+>hEv$F$O$aK!$H8F$P$1$k$f$ ($s$G$9!#Hs@~7A$,2?$r0UL#$7$F$$$k$N$+$r8+$k$?$a$NNc $r>R2p$7$^$9$,!"$=$NA0$K$$$/$D$+$N2>Dj$K$D$$$F=R$Y$F$*$-$^$9!#$3$3$G$O4JC1$N$?$a!"1 JQ?t$N%f!<%6!< Dj5A4X?t$O z=f(x), 2 JQ?t$N4X?t$O z=f(x,y) $N$h$&$K$7!"$$$:$1$b=>B0JQ?t$H$7$F z $rMQ$$$k$3$H$K$7$^$9!# %Q%i%a!<%?$H$O fit $,D4@0$7$FE,@Z$JCM$r7hD j$9$k%f!<%6Dj5AJQ?t$G!"4X?t$ND j5A<0Cf$NL$CN?t$G$9!#$3$3$G 8@$&!"@~7A@-/Hs@~7A@-$H$O!"=>B0JQ?t z $H fit $,D4@0$9$k%Q%i%a!<%?$H$N4X78$KBP$9$k$b$N$G$"$j!"z $HFHN) JQ?t x ($^$?$O x $H y) $H$N4X78$N$3$H$G$O$"$j$^$;$s (?t3XE*$K=R$Y$k$H!"@~7A:G>.<+>hLdBj$G$O!"Ev$F$O$a 4X?t$N%Q%i%a!<%?$K$h$k 2 3, ($=$7$F9 9$K9b3,$N) F34X?t$O 0!"$H$$$&$3$H$K$J$j$^$9)!#

@~7A:G>.<+>hK! (LLS) $G$O!"%f!<%6Dj5A4X?t$OC1=c$J4X?t$NOB$G$"$j!"$=$1$>$1$O0 1$D$N%Q%i%a!<%?$ND j?tG\ $GB>$N%Q%i%a!<%?$r4^$^$J$$9 `$K$J$j$^$9!#Hs@~7A:G>.<+>hK! (NLLS) $G$O$h$jJ#; ($J4X?t$r07$$!"%Q%i%a!< %?$O?'$s$J; H$o$1J}$r$5$1$^$9!#%U!<%j% (5i?t$O@~7A$HHs@~7A$N:G>.<+>hK!$N0c$$$rI=$90 1$D$NNc$G$9!#%U!< %j% (5i?t$G$O0 1$D$N9 `$O

```
z=a*sin(c*x) + b*cos(c*x).
```

$N$h$&$KI=$5$1$^$9!#$b$7!"a $H b $,L$CN$J%Q%i%a!<%?$G c $OD j?t$@$H$9$1$P%Q%i%a!<%?$NI>2A$O@~7A:G>.<+ >hLdBj$K$J$j$^$9!#$7$+$7!"c $,L$CN$J%Q%i%a!<%?$J$i$P$=$1$OHs@~7ALdBj$K$J$j$^$9!#

@~7A$N>19g!"%Q%i%a!<%?$NCM$OHf3SE*4JC1$J@~7ABe?t$ND>@\K!$K$h$C$F7hDj$G$-$^$9!#$7$+$7$=$N$h$&$J LLS $OFC<1$J>19g$G$"$j!"'gnuplot' $,;HMQ$9$kH?I |K!$O!"$b$A$m$s$=$1$b4^$a$F!"$h$j0lHIE*$J NLLS LdBj$r2r $/$3$H$,$G$-$^$9!#fit $O8!:w$r9T$&$3$H$G:G>.CM$rC5$=$&$H$7$^$9!#H?I |$N3F%9%F%C%W$O!"%Q%i%a!<%?$N?7 $7$$CM$NAH$KBP$7$F WSSR $r7W;;$7$^$9!#Marquardt- Levenberg $N% "%k%4%j% :% `$O<!$N%9%F%C%W$N%Q%i%a!< %?$NCM$rA*Br$7$^$9!#$=$7$F$=$1$O$"$i$+$8$aM?$ ($?4p=`!"$9$J$o$A!"(1) Ev$F$O$a$,"<}B+$7$?" (WSSR $N AjBP8m:9$,$"$k8B3&CM$h$j>.$5$/$J$C$?>19g!#0J2<;2>H: **set fit limit (p. 129)**)!"$^$?$O (2) $"$i$+$8$a@_Dj $5$1$?H?I |?t$N8B3&$KC#$7$?>19g (0J2<;2>H: **set fit maxiter (p. 129)**)!"$N$$$:$1$+$rK~$?$9$^$GB3$1$i$1 $^$9!#%-!<%\!<%I$+$i$=$NEv$F$O$a$NH?I |$OCfCG$G$-$^$9$7!"$=$1$KB3$$$FCf;_$9$k$3$H$b$G$-$^$9 (0J2<;2 >H: **fit (p. 75)**)!#%f!<%6JQ?t FIT_CONVERGED $O!"D>A0$Nfit %3%^%s%I$,<}B+$K$h$j=*N;$7$?>19g$O 1 $r ;}$A!"$=$10J30$NM}M3$GCfCG$7$?>19g$O 0 $r;}$A$^$9!#FIT_NITER $O!"D>A0$NEv$F$O$a$G9T$o$1$?7+$jJV$7 $N2s?t$r;}$A$^$9!#

Ev$F$O$a$K;H$o$1$k4X?t$O$7$P$7$P$"$k%b%G%k ($^$?$O$"$kM}O@) $r85$K$7$F$$$F!"$=$1$O%G!<%?$N?6Iq$r5-=R $7$?$j!"$"$k$$$OM=B,$7$h$&$H$7$^$9!#$h$C$F fit $O!"%G!<%?$,$=$N%b%G%k$KI$1$/$i$$$&$^$/Ev$F$O$^$C$F $$$k$N$+$r7hDj$9$k$?$a!"$=$7$F8D!9$N%Q%i%a!<%?$N8m:9$NHO0O$rI>2A$9$k$?$a$K!"%b%G%k$N<+M3$J%Q%i%a!< %?$NCM$r5a$a$k$N$K;H$o$1$^$9!#0J2<;2>H: **fit error_estimates (p. 78)**!#

$=$&$G$J$1$1$P!"6J@~$K$h$kEv$F$O$a$K$*$1$k4X?t$O!"%b%G%k$H$OL54X78$KA*$P$1$F$$$^$9 ($=$1$O==J,$JI= 8=NO$H:G$b>/$J$$?t$N%Q%i%a!<%?$r;}$A!"%G!<%?$N798~$r5-=R$7$=$&$J4X?t$H$7$F7P83$K4p$E$$$FA*$P$1$k$G $7$g$&)!#

$7$+$7!"$b$7$"$J$?$,A4$F$N%G!<%?E@$rDL$k$h$&$J3j$i$+$J6J@~$rM_$7$$$J$i fit $G$O$J$/!"$`$7$m plot $N **smooth** %*%W%7%g%s$G$=$1$r9T$&$Y$-$G$7$g$&!#

## 8m:9I>2A (error estimates)

**fit** $K$*$$$F "8m:9" $H$$$&MQ8l$O 2 $D$N0[$J$C$?J8L.$GMQ$$$i$1$^$9!#0 1$D$O%G!<%?8m:9!"$b$&0 1$D$O%Q%i %a!<%?8m:9$G$9!#

%G!<%?8m:9$O!"J?J};D:9$N=E$_IU$-$NOB WSSR!"$9$J$o$A&V<+>h$r7hDj$9$k:]8D!9$N%G!<%?E@$NAjBPE*$J=E$_ $r7W;;$9$k$N$KMQ$$$i$1$^$9!#$=$1$i$O%Q%i%a!<%?$NI>2A$K1F6A$rM?$ ($^$9!#$=$1$O!"$=$1$i$,!"Ev$F$O$a$i $1$?4X?t$+$i$N8D!9$N%G!<%?E@$NJP:9$,:G=*E*$JCM$KM?$ ($k1F6A$NBg$-$5$r7hDj$9$k$3$H$K$h$j$^$9!#@53N$J %G!<%?8m:9I>2A$,M?$ ($i$1$F$$$k>19g$K$O!"%Q%i%a!<%?$N8m:9I>2AEy$N **fit** $,=PNO$9$k>pJs$O$h$jLr$KN)$D$G $7$g$&!#

**statistical overview** $G$O **fit** $N=PNO$N$$$/$D$+$r@bL@$7!"'practical guidelines' $KBP$9$kGX7J$r=R$Y$F$$ $^$9!#

## E}7WE*$J35MW (statistical overview)

Hs@~7A:G>.<+>hK! (Non-Linear Least-Squares; NLLS) $NM}O@$O!"8m:9$N@55,J,I[$NE@$+$i0lHIE*$K5-=R$5$1 $F$$$^$9!#$9$J$o$A!"F~NO%G!<%?$OM?$ ($i$1$?J?6Q$H$=$NJ?6Q$KBP$9$kM?$ ($i$1$?I8=`JP:9$r;}$D%,%&%9 (@5 5,) J,I[$K=>$&J1=8CD$+$i$NI8K\$H2>Dj$5$1$^$9!#==J,Bg$-$$I8K\!"$=$7$FJ1=8CD$NI8=`JP:9$rCN$k$3$H$KBP $7$F$O!"&V<+>hJ,I[E}7W$rMQ$$$F!"DL>o!V&V<+>h!W$H8F$P$1$kCM$rD4$Y$k$3$H$K$h$j!VEv$F$O$a$NNI$5!W$r=R

$Y$k$3$H$,$G$-$^$9!#8:$i$5$l$?<+M3EY$N&V<+>h (&V<+>h$N<+M3EY$O!"%G!<%?E@$N?t$+$iEv$F$O$a$i$l$k%Q%i%a!<%?$N8D?t$@$10z$$$??t) $, 1.0 $G$"$k>l9g$O!"%G!<%?E@$HEv$F$O$a$i$l$?4X?t$H$NJP:9$N=E$_$D$-<+>hOB$,!"8=:_$N%Q%i%a!<%?CM$KBP$9$k4X?t$HM?$($i$l$?I8=`JP:9$K$h$C$FFCD'IU$1$i$l$?Jl=8CD$N!"%i%s%@%`$J%5%s%W%k$KBP$9$k<+>hOB$H$,A4$/F1$8$G$"$k$3$H$r0UL#$7$^$9!#

J,;6 = Am7W$G$"$k?t$(>e$2E}7W3XF1MM!"Jl=8CD$NI8=`JP:9$,Dj?t$G$J$$>l9g!"3FE@$O4QB,$5$l$kJP:9$NOB$H4|BT$5$l$kJP:9$NOB$rHf3S$9$k$H$-$K8DJL$K=E$_$E$1$5$l$k$Y$-$G$9!#

:G=*CJ3,$Gfit $O'stdfit'!"$9$J$o$A;D:9$NRMS (<+>hJ?6QJ?J}:,) $G5a$a$i$l$kEv$F$O$a$NI8=`JP:9$H!"%G!<%?E@$,=E$_$E$1$i$l$F$$$k>l9g$K'8:$i$5$l$?&V<+>h' $H$b8F$P$l$k;D:9$NJ,;6$r%l%]!<%H$7$^$9!#<+M3EY(%G!<%?E@$N?t$+$iEv$F$O$a%Q%i%a!<%?$N?t$r0z$$$?$b$N) $O$3$l$i$NI>2A$G;HMQ$5$l$^$9!#$J$<$J$i!"%G!<%?E@$N;D:9$N7W;;$G;H$o$l$k%Q%i%a!<%?$OF1$8%G!<%?$+$iF@$i$l$k$b$N$@$+$i$G$9!#%G!<%?E@$,=E$_$r;}$D>l9g!"gnuplot $O$$$o$f$kp-CM$r7W;;$7$^$9!#$=$l$O$=$N<+M3EY$H7k2L$N&V<+>hCM$KBP$9$k&V<+>hJ,I[$NN_@QJ,I[4X?tCM$r1$+$i0z$$$?CM$G$9!#0J2<;2>H: **practical_guidelines (p. 79)**!#$3$l$i$NCM$O0J2<$NJQ?t$KBeF~$5$l$^$9:

```
FIT_NDF = <+M3EY$N?t
FIT_WSSR = =E$_$D$-;D:9$N<+>hOB
FIT_STDFIT = sqrt(WSSR/NDF)
FIT_P = p-CM
```

%Q%i%a!<%?$K4X$9$k?.Mj%l%Y%k$rI>2A$9$k$3$H$G!"Ev$F$O$a$+$iF@$i$l$k:G>.$N&V<+>h$H!"MW5a$9$k?.Mj%l%Y%k$N&V<+>h$NCM$r7hDj$9$k$?$a$N&V<+>h$NE}7W$rMQ$$$k$3$H$,=PMh$^$9!#$7$+$7!"$=$N$h$&$JCM$r@8@.$9$k%Q%i%a!<%?$NAH$r7hDj$9$k$K$O!"AjEv$N$5$i$J$k7W;;$,I,MW$H$J$k$G$7$g$&!#

**fit** $O?.Mj6h4V$N7hDj$h$j$`$7$m!":G8e$NH?I|8e$NJ,;6-6&J,;69TNs$+$iD>$A$KF@$i$l$k%Q%i%a!<%?$N8m:9I>2A$rJs9p$7$^$9!#$3$l$i$NI>2A$O!"I8=`JP:9$H$7$F7W;;$5$l$kNL$N;XDj$K4X$9$kE}7W>e$N>r7o$,!"0lHL$K$OHs@~7A:G>.<+>hLdBj$G$OJ]>Z$5$l$J$$N$G$9$,!"@~7A:G>.<+>hLdBj$G$NI8=`8m:9 (3F%Q%i%a!<%?$NI8=`JP:9) $HF1$8J}K!$G7W;;$5$l$^$9!#$=$7$F$=$N$?$a47Nc$K$h$j!"$3$l$i$O "I8=`8m:9" $H$+ "A26aI8=`8m:9" $H8F$P$l$F$$$^$9!#A26aI8=`8m:9$O0lHL$K3Z4Q2a$.!"?.Mj%l%Y%k$N7hDj$K$O;H$&$Y$-$G$O$"$j$^$;$s$,!"Dj@-E*$J;XI8$H$7$F$OLr$KN)$D$G$7$g$&!#

:G=*E*$J2r$O!"2r$NHCOO$K$*$1$k%Q%i%a!<%?$NAj4X$r<($9Aj4X9TNs$b@8@.$7$^$9: $=$N<gBP3QMWAG!"$9$J$o$A<+8JAj4X$O>o$K 1 $G!"A4$F$N%Q%i%a!<%?$,FHN)$J$i$PHsBP3QMWAG$O$9$Y$F 0 $K6a$$CM$K$J$j$^$9!#40A4$KB>$rJd$$$"$& 2 $D$NJQ?t$O!"Bg$-$5$, 1 $G!"4X78$,@5$NAj4X$+I i$NAj4X$+$K$h$C$F@5$+I i$K$J$kId9f$r;}$DHsBP3QMWAG$r;}$A$^$9!#HsBP3QMWAG$NBg$-$5$,>.$5$$$[$I!"3F%Q%i%a!<%?$NI8=`JP:9$NI>2A$O!"A26aI8=`8m:9$K6a$/$J$j$^$9!#

## <BMQE*$J%,%$%I%i%$%s (practical guidelines)

8D!9$N%G!<%?E@$X$N=E$_$E$1$N3d$jEv$F$N4pAC$rCN$C$F$$$k$J$i!"$=$l$,B,Dj7k2L$KBP$9$k$h$j>\$7$$>pJs$r;HMQ$5$;$h$&$H$9$k$G$7$g$&!#Nc$($P!"4v$D$+$NE@$OB>$NE@$h$jEv$F$K$J$k$H$$$&$3$H$r9MN8$KF~$l$k$3$H$,2DG=$G$9!#$=$7$F!"$=$l$i$O:G=*E*$J%Q%i%a!<%?$NCM$K1F6A$7$^$9!#

%G!<%?$N=E$_IU$1$O!":G8e$NH?I|8e$N **fit** $NDI2C=PNO$KBP$9$k2r<a$N4pAC$rM?$($^$9!#3FE@$KF1Ey$K=E$_IU$1$r9T$J$&$K$7$F$b!"=E$_ 1 $r;H$&$3$H$h$j$b$`$7$mJ?6QI8=`JP:9$rI>2A$9$k$3$H$,!"&V<+>h$,Dj5A$K$h$j$=$&$G$"$k$h$&$K!"WSSR $rL5<!85JQ?t$H$9$k$3$H$K$J$j$^$9!#

Ev$F$O$aH?I|$N3FCJ3,$G!"Ev$F$O$a$N?J9T$NI>2A$K;H$&$3$H$,=PMh$k>pJs$,I=<($5$l$^$9 ('*' $O$h$j>.$5$$ WSSR $r8+$D$1$i$l$J$+$C$?$3$H!"$=$7$F:F;n9T$7$F$$$k$3$H$r0UL#$7$^$9)!#'sum of squares of residuals' (;D:9$N<+>hOB) $O!"'chisquare' (&V<+>h) $H$b8F$P$l$^$9$,!"$3$l$O%G!<%?$HEv$F$O$a4X?t$H$N4V$N WSSR $r0UL#$7$F$$$F!"fit $O$3$l$r:G>.2=$7$h$&$H$7$^$9!#$3$NCJ3,$G!"=E$_IU$1$5$l$?%G!<%?$K$h$C$F!"&V<+>h$NCM$O<+M3EY(= %G!<%?E@$N?t - %Q%i%a!<%?$N?t) $K6aIU$/$3$H$,4|BT$5$l$^$9!#WSSR $OJd@5$5$l$?&V<+>hCM (WSSR/ndf; ndf = <+M3EY)!"$^$?$OEv$F$O$aI8=`JP:9 (stdfit = sqrt(WSSR/ndf)) $r7W;;$9$k$N$K;H$o$l$^$9!#$=$l$i$O:G=*E*$J WSSR $KBP$7$F%l%]!<%H$5$l$^$9!#

%G!<%?$,=E$_IU$1$5$l$F$$$J$1$l$P!"stdfit $O!"%f!<%6$NC10L$G$N!"%G!<%?$HEv$F$O$a4X?t$NJP:9$NRMS (<+>hJ?6QJ?J}:,) $K$J$j$^$9!#

$b$7BEEv$J%G!<%?8m:9$rM?$(!"%G!<%?E@$,==J,B?$/!"%b%G%k$,@5$7$1$l$P!"Jd@5&V<+>hCM$O$[$\1 $K$J$j$^$9 (>\:Y$O!"E,Ev$JE}7W3X$NK\$N'&V<+>hJ,I[' $N9`$r;2>H$7$F$/$@$5$$)!#$3$N>l9g!"$3$N35MW$K=q$+$l$F$$$k$3$H0J30$K!"%b%G%k$,%G!<%?$K$I$l$/$i$$$NI$/Ev$F$^$C$F$$$k$+$r7hDj$9$k$?$a$NDI2C$N;n83J}K!$,$$$/$D$+$"$j$^$9!#

Jd@5&V<+>h$, 1 $h$j$O$k$+$KBg$-$/$J$C$?$i!"$=$l$OIT@5$J%G!<%?8m:9I>2A!"@55,J,I[$7$J$$%G!<%?8m:9!"%7

%9%F% `>e$NB,Dj8m: 9! "8IN)$7$?I8K\CM(outliers)! "$^$?$ONI$/$J$$%b%G%k4X?t$J$I$N$?$a$G$7$g$&! #Nc$($P **plot 'datafile' using 1:($2-f($1))** $J$I$H$7$F;D: 9$rIA2h$9$k$3$H$O! "$=$1$i$N%7%9%F% `E*$J798~$rCN$k$?$a$N <j$,$+$j$H$J$j$^$9! #%G!<%?E@$H4X?t$NN><T$rIA2h$9$k$3$H$O! "B>$N%b%G%k$r9M$($?$a$N<j$,$+$j$H$J$k$G $7$g$&! #

F1MM$K! "1.0 $h$j>.$5$$Jd@5&V<+>h$O! "WSSR $,! "@55,J,I[$9$k8m: 9$r;}$D%i%s%@% `$J%5%s%W%k$H4X?t$KBP$7 $F4|BT$5$1$k$b$N$h$j$b>.$5$$$3$H$r0UL#$7$^$9! #%G!<%?8m: 9I>2A$,Bg$-$9$.$k$N$+! "E}7WE*$J2>Dj$,@5$7$/ $J$$$N$+! "$^$?$O%b%G%k4X?t$,0lHIE*$9$.$F! "Fb:_E*798~$K2C$($FFC<l$J%5%s%W%k$K$h$kJQF0$NEv$F$O$a$K$J$C $F$$$k$N$G$7$g$&! #:G8e$N>l9g$O! "$h$j%7%s%W%k$J4X?t$K$9$1$P$&$^$/9T$/$G$7$g$&! #

Ev$F$O$a$N p-CM$O! "<+M3EY$H7k2L$N&V<+>hCM$KBP$9$k&V<+>hJ,I[$NN_@QJ,I[4X?tCM$r 1 $+$i0z$$$?CM$G$9! #$3 $1$O! "Ev$F$O$a$NNI$5$N$b$N$5$7$rDs6!$7$^$9! #p-CM$NHO0O$O 0 $+$i 1 $^$G$G! "p-CM$,$H$F$b>.$5$$! "$"$k$$ $O$H$F$bBg$-$$>l9g$O! "%b%G%k$,%G!<%?$H$=$N8m: 9$r$A$c$s$H5-=R$7$F$$$J$$$3$H$r0UL#$7$^$9! #>e$G=R$Y$? $h$&$K! "$3$1$O%G!<%?$KLdBj$,$"$k$+! "8m: 9$+%b%G%k$KLdBj$,$"$k! "$^$?$O$=$1$i$NAH$_9g$o$;$J$N$@$m$&$H ;W$$$^$9! #p-CM$,>.$5$$$3$H$O! "8m: 9$,2a>.I>2A$5$l$F$$$k$N$G! "$h$C$F:G=*E*$J%Q%i%a!<%?8m: 9$r%9%1!<%k JQ49$9$Y$-$@$m$&$H$$$&$3$H$r0UL#$9$k$G$7$g$&! #0J2<$b; 2>H: **set fit errorscaling (p. 129)**! #

I8= `E*$J% (%i!<$r! "%Q%i%a!<%?$NIT3NDj@-$K4X$9$k! "$"$k$h$j8=<BE*$JI>2A$K4X78IU$1$k$3$H! "$*$h$SAj4X9T Ns$N=EMW@-$rI>2A$9$k$3$H$,$G$-$k$h$&$K$J$kA0$K! "$"$J$?$O **fit** $H! "$=$1$rE,MQ$7$h$&$H$9$k$"$k<o$NLdBj $K47$l$F$*$/I,MW$,$"$k$G$7$g$&! #

**fit** $O! "BgDq$NHs@~7A:G>.<+>hK!$N<BAu$G$O6&DL$7$F! "5wN%$N<+>h(y-f(x))**2 $N=E$_IU$-$NOB$r:G>.2=$7$h$& $H$9$k$3$H$KCm0U$7$F$/$@$5$$! #$=$1$O! "x $NCM$N "8m: 9" $r7W; ;$K4X$7$F$O$I$s$JJ}K!$bM?$($F$O$*$i$:! "C1 $Ky $K4X$9$kI>2A$N$_$G$9! #$^$?! ""8IN)E@" (@55,J,I[$N%b%G%k$N$+$i30$l$F$$$k%G!<%?E@) $O>o$K2r$r0-2= $5$;$k2DG=@-$,$"$j$^$9! #

## @)8f (control)

%3%^%s%I **fit** $N@_Dj$O! "**set fit** $G@)8f$7$^$9! #0JA0$N **gnuplot** $N%f!<%6JQ?t$O! "%P!<%8%g%s 5 $GHs?d>)$H$J$C $F$$$^$9! #0J2<; 2>H: **fit control variables (p. 80)**! #

**gnuplot** $N5/F0A0$K **fit** $K1F6A$rM?$($k$h$&$KDj5A$G$-$kB?$/$N4D6-JQ?t$,$"$j$^$9! #0J2<; 2>H: **fit control environment (p. 81)**! #

### @)8fJQ?t (control variables)

$3$3$G@bL@$9$k%f!<%6Dj5AJQ?t$O! "Hs?d>)$G$9! #0J2<; 2>H: **set fit (p. 129)**! #

%G%U%)%k%H$N$b$C$H$b>.$5$$?t; z$N8B3& (1e-5) $O! "JQ?t

```
FIT_LIMIT
```

$GJQ99$9$G$-$^$9! #; D: 9$NJ?J}<+>hOB$,2 $D$NH?I|%9%F%C%W4V$G! "$3$N?tCM$h$j>.$5$$?t$7$+JQ2=$7$J$+$C$?>l 9g! "Ev$F$O$a%k!<%A%s$O! "$3$1$r'<}B+$7$?' $H8+$J$7$^$9! #

H?I|?t$N:GBgCM$OJQ?t

```
FIT_MAXITER
```

$G@)8B$5$l$^$9! #0 ($^$?$ODj5A$7$J$$>l9g) $O@)8BL5$7$r0UL#$7$^$9! #

99$K$=$N%"%k%4%j%:% `$r@)8f$7$?$$>l9g$G! "$+$D Marquardt-Levenberg %"%k%4%j%:% `$rNI$/CN$C$F$$$k>l9g $O! "$5$i$K$=$l$K1F6A$rM?$($kJQ?t$,$"$j$^$9! #**lambda** (&K) $N:G=i$NCM$O! "DL>o ML 9TNs$+$i<+F0E*$K7W ; ;$5$l$^$9$,! "$b$7$=$1$r$"$i$+$8$aMQ0U$7$?CM$K%;%C%H$7$?$1$l$P

```
FIT_START_LAMBDA
```

$K%;%C%H$7$F$/$@$5$$! #FIT_START_LAMBDA $r 0 0J2<$K%;%C%H$9$k$H! "<+F0E*$K7W; ;$5$l$k$h$&$K$J$j$^ $9! #JQ?t

```
FIT_LAMBDA_FACTOR
```

$O! "&V<+>h2=$5$l$?4X?t$,A}2C! "$"$k$$$O8:>/$9$k$K$D$l$F **lambda** $,A}2C$"$k$$$O8:>/$9$k0x?t$rM?$($^ $9! #FIT_LAMBDA_FACTOR $r 0 $H$9$k$H! "$=$1$O%G%U%)%k%H$N0x?t 10.0 $,;HMQ$5$l$^$9! #

**fit** $K$O FIT_ $+$i; O$^$kJQ?t$,B>$K$b$"$j$^$9$+$i! "%f!<%6Dj5AJQ?t$H$7$F$O$=$N$h$&$JL>A0$G; O$^$kJQ?t$O ;H$o$J$$$h$&$K$9$k$N$,0BA4$G$7$g$&! #

JQ?t FIT_SKIP $H FIT_INDEX $O!"0JA0$NHG$N **gnuplot** $N!"**gnufit** $H8F$P$l$F$$$? **fit** %Q%C%A$G;H$o$l$F$$$?$b$N$G!"8=:_$O;HMQ$5$l$F$$$^$;$s!#FIT_SKIP $N5!G=$O%G!<%?%U%!%$%k$KBP$9$k **every** ;XDj;R$GMQ0U$5$l$F$$$^$9!#FIT_INDEX $OJ#?tEv$F$O$aK! (multi-branch fitting) $G;H$o$l$F$$$?$b$N$G$9$,!"1 JQ?t$NJ#?tEv$F$O$aK!$O!":#$G$O 5 ?;w 3 <!85Ev$F$O$a$H$7$F9T$J$o$l$F$$$F!"$=$3$G$O;^$N;XDj$K$O 2 JQ?t$H **using** $,;H$o$l$F$$$^$9!#0J2<;2>H: **fit multi-branch (p. 81)**!#

## 4D6¬JQ?t (control environment)

4D6¬JQ?t$O **gnuplot** $,N)$A>e$,$kA0$KDj5A$7$J$1$l$P$J$j$^$;$s!#$=$N@_DjJ}K!$O%*%Z%l!<%F%#%s%0%7%9%F%`$K0MB8$7$^$9!#

```
FIT_LOG
```

$O!"Ev$F$O$a$N%m%0$,=q$+$l$k%U%!%$%kL>($*$h$S%Q%9) $rJQ99$7$^$9!#%G%U%)%k%H$G$O!":n6H%G%#%l%/%H%j>e$N "fit.log" $H$J$C$F$$$^$9!#$=$N%G%U%)%k%H$NCM$O%3%^%s%I **set fit logfile** $r;H$C$F>e=q$-$G$-$^$9!#

```
FIT_SCRIPT
```

$O!"%f!<%6$,CfCG$7$?8e$K<B9T$9$k%3%^%s%I$r;XDj$7$^$9!#%G%U%)%k%H$G$O**replot** $G$9$,!"**plot** $d**load** %3%^%s%I$H$9$l$P!"Ev$F$O$a$N?J9T>u67$NI=<($r%+%9%?%^%$%:$9$k$N$KJXMx$G$7$g$&!#$=$N@_Dj$O!"**set fit script** $r;H$C$FJQ99$G$-$^$9!#

## J#?t$NEv$F$O$a (multi-branch)

J#?tEv$F$O$aK! (multi-branch fitting) $G$O!"J#?t$N%G!<%?=89g$r!"6&DL$N%Q%i%a!<%?$r;}$DJ#?t$N 1 JQ?t$N4X?t$K!"WSSR $NAmOB$r:G>.2=$9$k$3$H$K$h$C$FF1;~$KEv$F$O$a$k$3$H$,=PMh$^$9!#3F%G!<%?=89g$KBP$9$k4X?t$H%Q%i%a!<%? (;^) $O'5?;wJQ?t' $r;H$&$3$H$GA*Br$G$-$^$9!#Nc$($P!"%G!<%?9THV9f (-1; '%G!<%?Ns' $NHV9f) $^$?$O%G!<%?%U%!%$%kHV9f (-2) $r 2 $DL\$NFHN)JQ?t$H$7$^$9!#

Nc: 2 $D$N;X?t8:?j7A z=f(x) $,M?$($i$l$F$$$F!"$=$l$>$l0[$J$k%G!<%?=89g$r5-=R$7$F$$$k$,!"6&DL$7$?8:?j;~4V$r;}$A!"$=$N%Q%i%a!<%?$NCM$rI>2A$9$k!#%G!<%?%U%!%$%k$, x:z:s $N7A<0$G$"$C$?$H$9$k$H!"$3$N>l9g0J2<$N$h$&$K$9$l$P$h$$!#

```
    f(x,y) = (y==0) ? a*exp(-x/tau) : b*exp(-x/tau)
    fit f(x,y) 'datafile' using  1:-2:2:3  via a, b, tau
```

$h$jJ#;($JNc$K$D$$$F$O!"%G%b%U%!%$%k "fit.dem" $G;H$o$l$k "hexa.fnc" $r;2>H$7$F$/$@$5$$!#

$b$7=>B0JQ?t$N%9%1!<%k$K:9$,$"$k>l9g!"C10L$N=E$_IU$1$G$O 1 $D$N;^$,;YG[$7$F$7$^$&2DG=@-$,$"$k$N$G!"E,Ev$J=E$_IU$1$,I,MW$K$J$j$^$9!#3F;^$r%P%i%P%i$KEv$F$O$a$k$N$KJ#?tEv$F$O$aK!$N2r$r=i4|CM$H$7$FMQ$$$k$N$O!"A4BN$r9g$o$;$?2r$N3F;^$KBP$9$kAjBPE*$J1F6A$K4X$9$kI=<($rM?$($k$3$H$K$J$k$G$7$g$&!#

## =i4|CM (starting values)

Hs@~7AEv$F$O$a$O!"Bg0hE*$J:GE,CM (;D:9$N<+>hOB (SSR) $N:G>.CM$r;}$D2r) $X$N<}B+$OJ]>Z$O$7$^$;$s$,!"6I=jE*$J6K>.CM$rM?$($k$3$H$O$G$-$^$9!#$=$N%5%V%k!<%A%s$O$=$l$r7hDj$9$kJ}K!$r2?$b;}$A9g$o$;$F$$$J$$$N$G!"$3$l$,5/$3$C$?$+$I$&$+$rH=CG$9$k$N$O$"$J$?$N@UG$$H$J$j$^$9!#

**fit** $O!"2r$+$i1s$/$+$i;O$a$k$H<:GT$9$k$+$bCN$l$^$;$s$7!"$7$P$7$P$=$l$O5/$3$jF@$^$9!#1s$/$H$$$&$N$O!"SSR $,Bg$-$/!"%Q%i%a!<%?$NJQ2=$KBP$7$F$=$NJQ2=$,>.$5$$!"$"$k$$$O?tCME*$KITIBDj$JNN0h (Nc$($P?tCM$,Bg$-$9$.$FIbF0>.?t$N7e$"$U$l$r5/$3$9) $KE~C#$7$F$7$^$C$F!"$=$N7k2L "L$Dj5ACM(undefined value)" $N%a%C%;!<%8$+ **gnuplot** $NDd;_$r0z$-5/$3$7$F$7$^$&$h$&$J>l9g$r0UL#$7$^$9!#

Bg0hE*$J:GE,CM$r8+$D$1$k2DG=@-$r2~A1$9$k$K$O!":G=i$NCM$r$=$N2r$K>/$J$/$H$b$[$\6a$/$K<h$k$Y$-$G$7$g$&!#Nc$($P!"$b$72DG=$J$i$P0l7eJ,$NBg$-$5$NHO0OFb$G!#:G=i$NCM$,2r$K6a$$$[$IIT@5$J2r$G=*N;$7$F$7$^$&2DG=@-$OD c$/$J$j$^$9!#:G=i$NCM$r8+$D$1$k0l$D$NJ}K!$O!"%G!<%?$HEv$F$O$a4X?t$rF1$8%0%i%U$N>e$KIA2h$7$FE,Ev$J6a$5$KC#$9$k$^$G!"%Q%i%a!<%?$NCM$rJQ99$7$F**replot** $9$k$3$H$r7+$jJV$9$3$H$G$9!#$=$NIA2h$O!"IT@5$J6K>.CM$r8+$D$1$?$3$H$GEv$F$O$a$,=*N;$7$?$+$I$&$+$r%A%'%C%/$9$k$N$K$bM-MQ$G$9!#

$b$A$m$s!"8+$?L\$,NI$$Ev$F$O$a$,8+$D$+$C$F$b!"$=$l$O "$=$l$h$j$h$$" Ev$F$O$a ($"$k2~NI$5$l$?Ev$F$O$a$NNI$5$N4p=`$K$h$C$FFCD'IU$1$i$l$?E}7W3XE*$J0UL#$G!"$"$k$$$O$=$N%b%G%k$N$h$jE,@Z$J2r$G$"$k!"$H$$$&J*M}E*$J0UL#$G) $,B8:_$7$J$$$3$H$N>ZL@$K$O$J$j$^$;$s!#LdB j$K$h$C$F$O!"3F%Q%i%a!<%?$N0UL#$N$"$kHO0O$r%+%P!<$9$k$h$&$JMM!9$J=i4|CM$N=89g$KBP$7$F **fit** $9$k$3$H$,K>$^$7$$$+$bCN$l$^$;$s!#

### %R%s%H (tips)

$3$3$G$O! "**fit** $r:GBg8B$KMxMQ$9$k$?$a$K$$$/$D$+3P$ ($F$*$/$Y$-%R%s%H$r>R2p$7$^$9! #$=$1$i$OAH?%E*$G$O$J $$$N$G! "$=$NK\<A$,$7$_9~$`$^$G2?2s$b$h$/FI$s$G$/$@$5$$! #

**fit** $N0z?t$N **via** $K$O! "2 $D$NBg$-$/0[$J$kL\E*$N$?$a$N 2 $D$N7A<0$,$"$j$^$9! #**via "file"** $N7A<0$O! "%P%C %A=hM} (HsBPOC7?$G$N<B9T$,2DG=) $G:G$bNI$/;H$o$1! "$=$N%U%!%$%k$NCf$G=i4|CM$rM?$ ($k$3$H$,$G$-$^$9! #

**via var1, var2, ...** $N7A<0$OBPOC7?$N<B9T$GNI$/;H$o$1! "%3%^%s%I%R%9%H%j$N5!9=$,;H$C$F%Q%i%a!<%?%j%9%H $NJT=8$r9T$$! "Ev$F$O$a$r<B9T$7$?$j! "$"$k$$$O?7$7$$=i4|CM$rM?$ ($F<!$N<B9T$r9T$J$C$?$j$7$^$9! #$3$1$O F@$7$$LdBj$KBP$7$F$OFC$KM-MQ$G! "A4$F$N%Q%i%a!<%?$KBP$7$F 1 EY$@$1Ev$F$O$a$rD>@\<B9T$7$F$b! "NI$$=i4| CM$G$J$1$1$P$&$^$/$$$+$J$$$3$H$,5/$3$jF@$k$+$i$G$9! #$=$1$r8+$D$1$k$K$O! "$$$/$D$+$N%Q%i%a!<%?$N$_$K BP$7$F2?2s$+H?I|$r9T$J$$! ":G=*E*$K$OA4$F$N%Q%i%a!<%?$KBP$9$k 1 EY$NEv$F$O$a$,$&$^$/$$$/$H$3$m$K==J, 6a$/$J$k$^$G$=$1$r7+$jJV$9$3$H$G$9! #

Ev$F$O$a$r9T$J$&4X?t$N%Q%i%a!<%?4V$K6&DL$N0MB84X78$,$J$$$3$H$O3NG'$7$F$*$$$F$/$@$5$$! #Nc$($P!" a*exp(x+b) $rEv$F$O$a$K;H$C$F$O$$1$^$;$s! #$=$1$O a*exp(x+b)=a*exp(b)*exp(x) $@$+$i$G$9! #$h$C$F $3$N>19g$O a*exp(x) $^$?$O exp(x+b) $r;H$C$F$/$@$5$$! #

5;=QE*$J$*OC @dBPCM$,:G$bBg$-$$%Q%i%a!<%?$H:G$b>.$5$$%Q%i%a!<%?$NHf$,Bg$-$$DxEv$F$O$a$N<}B+$OCY$/ $J$j$^$9! #$=$NHf$,!"%^%7%s$NIbF0>.?t$N@:EY$N5U?t$K6a$$$+! "$^$?$O$=$10J>e$J$i$P! "$[$\$:$C$H<}B+$7$J $$$+<}B+$9$kA0$K<B9T$,CfCG$9$k$G$7$g$&! #$h$C$F$=$N$h$&$J>19g$O! "$=$N4X?t$ND j5A$GNc$($P 'parameter' $r '1e9*parameter' $K$9$k$H$+! ":G=i$NCM$r 1e9 $G3d$k$H$+$7$F$3$1$rHr$1$k$h$&$K2~NI$9$k$+! "$^$?$O **set fit prescale** $G%Q%i%a!<%?$N=i4|CM$K=>$C$F$=$N%9%1!<%kJQ49$rFbIt$G$d$i$;$k5!G=$rMQ$$$k$+! "$N$$$:$1$+ $,I,MW$G$7$g$&! #

$b$7! "4X?t$r! "Ev$F$O$a$k%Q%i%a!<%?$r78?t$H$9$k! "C1=c$J4X?t$N@~7A7k9g$G=q$1$k$J$i! "$=$1$O$H$F$b$$$$ $N$G@'Hs$=$&$7$F$/$@$5$$! #2?8N$J$i! "LdBj$,$b$O$dHs@~7A$G$O$J$$$N$G! "H?I|$O>/$J$$2s?t$G<}B+$9$k$G$7$g $&! #$b$7$+$7$?$i$?$C$?0l2s$G$9$`$+$b$7$1$^$;$s! #

<B:]$N<B83$N9V5A$G$O%G!<%?2r@O$KBP$9$k$$$/$D$+$N;X<($,M?$($i$1! "$=$1$G%G!<%?$X$N:G=i$N4X?t$NEv$F$O $a$,9T$J$o$1$^$9! #$b$7$+$9$k$H! "4pACM}O@$NJ#?t$NB&LI$K$R$H$D$:$DBP1~$9$kJ#?t2s$N%W%m%;%9$,I,MW$+$b CN$1$^$;$s$,! "$=$7$F$=$1$i$N4X?t$NEv$F$O$a$N%Q%i%a!<%?$+$iK\Ev$KM_$7$+$C$?>pJs$r<h$j=P$9$G$7$g$&! # $7$+$7! "**fit** $r;H$ ($P! "5a$a$k%Q%i%a!<%?$N;kE@$+$iD>@\%b%G%k4X?t$r=q$/$3$H$K$h$j! "$=$1$O$7$P$7$P 1 2s $G:Q$`$N$G$9! #;~! 9$O$h$jF@$7$$Ev$F$O$aLdBj$N7W;;%3%9%H$,$+$+$j$^$9$,! "%G!<%?JQ49$b$+$J$j$N3d9g$GHr $1$k$3$H$,=PMh$^$9! #$b$7$3$1$,! "Ev$F$O$a4X?t$NC1=c2=$K4X$7$F! "A0$NCJMn$HL7=b$7$F$k$H;W$&$J$i! "$=$1 $O@52r$G$9! #

"singular matrix" $N%a%C%;!<%8$O! "$3$N Marquardt-Levenberg %"%k%4%j%:%`$N%k!<%A%s$,!"<!$NH?I|$KBP$9 $k%Q%i%a!<%?$NCM$N7W;;$,=PMh$J$$$3$H$r0UL#$7$^$9! #$3$N>19g! "JL$J=i4|CM$+$i;O$a$k$+! "4X?t$rJL$J7A$G =q$-D>$9$+! "$h$j4JC1$J4X?t$K$7$F$_$F$/$@$5$$! #

:G8e$K! "B>$NEv$F$O$a%Q%C%1!<%8 (fudgit) $N%^%K%e%"%k$+$i! "$3$1$i$NJ8=q$rMWLs$9$k$h$&$J$$$0zMQ$r>e$2 $^$9: "Nonlinear fitting is an art! (Hs@~7AEv$F$O$aK!$O7]=Q$@!)"

# Help

**help** %3%^%s%I$O! "AH$_9~$_%X%k%W$rI=<($7$^$9! #$"$k9`$K$D$$$F$N@bL@$r;XDj$7$?$$$H$-$K$O! "<!$N=q<0$r ;H$C$F2<$5$$:

```
help {<9`L\L>>}
```

$b$7 <9`L\L>> $,;XDj$5$1$J$+$C$?>19g$O! "**gnuplot** $K$D$$$F$N4JC1$J@bL@$,I=<($5$1$^$9! #;XDj$7$?9`L\ $K$D$$$F$N@bL@$,I=<($5$1$?8e! "$=$1$KBP$9$k:YL\$N%a%K%e!<$,I=<($5$1! "$=$N:YL\L>$rF~NO$9$k$3$H$G:YL\ $KBP$9$k%X%k%W$rB3$1$k$3$H$,$G$-$^$9! #$=$7$F! "$=$N:YL\$N@bL@$,I=<($5$1$?8e$K! "$5$i$J$k:YL\L>$NF~NO $rMW5a$5$1$k$+! "$^$?$O 1 $DA0$N9`L\$N%1%Y%k$XLa$j$^$9! #$3$1$r7+$jJV$9$H$d$,$F! "**gnuplot** $N%3%^%s%I%i %$%s$XHLa$j$^$9! #

$^$?! "5?LdId (?) $r9`L\$H$7$F;XDj$9$k$H! "8=:_$N%1%Y%k$N9`L\$N%j%9%H$,I=<($5$1$^$9! #

## History

%3%^%s%I **history** $O!"%3%^%s%IMzNr$N0lMw$rI=<($7$?$j!"J]B8$7$?$j!"0lMw$NCf$N%3%^%s%I$r:F<B9T$7$?$j$7$^$9!#$3$N%3%^%s%I$N5sF0$rJQ$($k$K$O!"0J2<;2>H: **set history (p. 136)**!#

**history** %3%^%s%I$G;O$^$kF~NO9T$O!"%3%^%s%IMzNr$K$OJ]B8$7$^$;$s!#

Nc:

```
history                # MzNrA4BN$rI=<(
history 5              # MzNrFb$ND>A0$N 5 $D$rI=<(
history quiet 5        # %(%s%H%jHV9f$J$7$GD>A0$N 5 $D$rI=<(
history "hist.gp"      # MzNrA4BN$r%U%!%$%k hist.gp $K=q$-=P$9
history "hist.gp" append # MzNrA4BN$r%U%!%$%k hist.gp $KDI2C$9$k
history 10 "hist.gp"   # D>A0$N 10 8D$r%U%!%$%k hist.gp $K=PNO
history 10 "|head -5 >>diary.gp" # %Q%$%W$GMzNr$r 5 $D=q$-=P$9
history ?load          # MzNrFb$N "load" $G;O$^$k$b$N$9$Y$F$rI=<(
history ?"set c"       # >e$HF1MM (J#?t$N8l$O0zMQId$G0O$`)
hi !reread             # "reread" $G;O$^$k:G$b?7$7$$9T$r<B9T
hist !"set xr"         # >e$HF1MM (J#?t$N8l$O0zMQId$G0O$`)
hist !55               # 55 HVL\$NMzNr9`L\$N%3%^%s%I$r:F<B9T
```

## If

?7$7$$=q<0:

```
if (<condition>) { <commands>;
       <commands>
       <commands>
} else {
       <commands>
}
```

0JA0$N=q<0:

```
if (<>r7o>) <%3%^%s%I9T> [; else if (<>r7o>) ...; else ...]
```

$3$N%P!<%8%g%s$N gnuplot $O!"if/else $N%V%m%C%/7A<0$r%5%]!<%H$7$F$$$^$9!#%-!<%o!<%I **if**, **else** $N8e$m$K3+;O%+%C%3 "{" $,B3$/>l9g!""}" $G=*N;$9$k%V%m%C%/$^$G$N$9$Y$F$NJ8 (J#?t$NF~NO9T$b2D) $K>r7oE*$J<B9T$,E,MQ$5$l$^$9!#if %3%^%s%I$OF~$l;R$K$9$k$3$H$b$G$-$^$9!#

8E$$7A<0$N 1 9T$N if/else J8$b$^$@%5%]!<%H$5$l$F$$$^$9$,!"?7$7$$%V%m%C%/7A<0$N=q<0$H$O: .$<$F$O$$$1$^$;$s!#0J2<;2>H: **if-old (p. 83)**!#

## If-old

gnuplot %P!<%8%g%s 4.4 $^$G$O!"if/else %3%^%s%I$NDIMQHO0O$O1 9TFb$KN1$^$C$F$$$^$7$?$,!"8=:_$OJ#?t9T$rCf%+%C%3 { } $G0O$s$G=q$/$3$H$,$G$-$^$9!#8E$$7A<0$b0l1~;D$5$l$F$$$^$9$,!"$=$l$OCf%+%C%3$N%V%m%C%/Fb$G;H$&$3$H$O$G$-$^$;$s!#

%-!<%o!<%I **if** $, "{" $r$H$b$J$o$J$$>l9g$O!"< >r7o > $,?? (%<%m$G$J$$) $J$i$P < %3%^%s%I9T > $N%3%^%s%I (J#?t$b2D) $,<B9T$5$l!"56 (%<%m) $J$i$P%9%-%C%W$5$l$^$9!#$$$:$l$N>l9g$bF~NO9T$N:G8e$K$J$k$+!"**else** $,8=$l$k$H$3$m$^$G$=$l$,9T$o$l$^$9!#; $r;H$&$HF1$89T$KJ#?t$N%3%^%s%ICV$/$3$H$,2DG=$G$9$,!">r7oIU$-$N%3%^%s%I (**if** $N9=J8<+BN) $O$=$3$G$O=*$i$J$$$3$H$KCm0U$7$F$/$@$5$$!#

Nc:

```
pi=3
if (pi!=acos(-1)) print "?Fixing pi!"; pi=acos(-1); print pi
```

$r<B9T$9$k$H!"

```
?Fixing pi!
3.14159265358979
```

$HI=<($5$1$^$9$,!"

```
if (1==2) print "Never see this"; print "Or this either"
```

$H$9$k$H!"2?$bI=<($5$1$^$;$s!#

$=$NB>:

```
v=0
v=v+1; if (v%2) print "2" ; else if (v%3) print "3" ; else print "fred"
```

(2?EY$b:G8e$N9T$r7+$jJV$7$F$_$F$/$@$5$$!)

## For

**plot**, **splot**, **set**, **unset** %3%^%s%I$G$O!"7+$jJV$7$N for @a$r; H$&$3$H$b$G$-$^$9!#$3$1$O!"4pK\E*$J%3%^%s%I $rJ#?t2s<B9T$9$k8z2L$r; }$A!"$=$N$*$N$*$N$N<B9T$G$O7+$jJV$7@)8fJQ?t$K$h$C$F?t<0$O:FI>2A$5$1$^$9!#**do** %3%^%s%I$G$O!"$I$s$J%3%^%s%INs$G$b7+$jJV$7<B9T$5$;$k$3$H$,$G$-$^$9!#7+$jJV$7@a$O8=:_$O0J2<$N2 $D$N 7A<0$r%5%]!<%H$7$F$$$^$9:

```
for [intvar = start:end{:increment}]
for [stringvar in "A B C D"]
```

Nc:

```
plot for [filename in "A.dat B.dat C.dat"] filename using 1:2 with lines
plot for [basename in "A B C"] basename.".dat" using 1:2 with lines
set for [i = 1:10] style line i lc rgb "blue"
unset for [tag = 100:200] label tag
```

7+$jJV$7$NF~$l;R$b%5%]!<%H$7$F$$$^$9:

```
set for [i=1:9] for [j=1:9] label i*10+j sprintf("%d",i*10+j) at i,j
```

$5$i$J$k@bL@$K$D$$$F$O!"0J2<;2>H: **iteration (p. 40)**, **do (p. 74)**!#

## Import

%3%^%s%I **import** $O!"%f!<%6Dj4|4X?tL>$r30It6&M-%*%V%8%'%/%H$+$i<h$j9~$^$1$k4X?t$K7k$S$D$1$^$9!#$3$1$O!"gnuplot $GMxMQ2DG=$J4X?t$N@_Dj$r3HD%$9$k%W%i%0%$%s5!9=$r9=@.$7$^$9!#

=q<0:

```
import func(x[,y,z,...]) from "sharedobj[:symbol]"
```

Nc:

```
# 4X?t myfun $r "mylib.so" $+ "mylib.dll" $+$i<h$j9~$s$G:n@.$9$k
# gnuplot $G$OIA2h!"$^$?$O?tCM7W;;$GMxMQ2DG=
import myfun(x) from "mylib"
import myfun(x) from "mylib:myfun"    # >e$HF1MM

# "theirlib.so" $+ "theirlib.dll" $GDj5A:Q$N4X?t theirfun $r:n@.
# 0[$J$kL>A0$GMxMQ2DG=
import myfun(x,y,z) from "theirlib:theirfun"
```

%W%m%0%i%`$O6&M-%*%V%8%'%/%H$H$7$FM?$($i$1$?L>A0$K!"%*%Z%l!<%F%#%s%0%7%9%F%`$K=>$C$F".so" $+ ".dll" $rDI2C$7!"$^$:$=$1$r%U%k%Q%9L>$H$7$F8!:w$7!"<!$K%+%1%s%H%G%#%1%/%H%j$+$i$NA jBP%Q%9L>$H$7$F8!:w$7$^$9!#%*%Z%l!<%F%#%s%0%7%9%F%`<+BN$b LD_LIBRARY_PATH $+ DYLD_LIBRARY_PATH $NG$0U$N%G%#%1%/%H%j$r8!:w$7$^$9!#

# Load

**load** %3%^%s%I$O!";XDj$5$1$?F~NO%U%!%$%k$N3F9T$r!"$=$1$,BFOCE*$KF~NO$5$1$?$+$N$h$&$K<B9T$7$^$9!#**save** %3%^%s%I$G$D$/$i$1$?%U%!%$%k$O!"**load** $9$k$3$H$,$G$-$^$9!#M-8z$J%3%^%s%I$N=q$+$1$?F%-%9%H%U%!%$%k $r$D$/$1$P!"$=$1$O!"**load** %3%^%s%I$K$h$C$F!"<B9T$9$k$3$H$,$G$-$^$9!#**load** Cf$N%U%!%$%k$NCf$K$5$i$K **load** $^$?$O **call** %3%^%s%I$,$"$C$F$b9=$$$^$;$s!#%3%^%s%ICf$N%3%a%s%H$K$D$$$F$O!"0J2<;2>H: **comments** (p. 26)!#**load** $9$k$H$-$K0z?t$rM?$($kJ}K!$K$D$$$F$O!"0J2<;2>H: **call** (p. 72)!#

=q<0:

```
      load "<F~NO%U%!%$%kL>>"
```

F~NO%U%!%$%kL>$O0zMQId$G0O$^$J$1$1$P$J$j$^$;$s!#

**load** %3%^%s%I$O!"I8=`F~NO$+$i$N%3%^%s%I$NF~NO$N$?$a$K!"FCJL$J%U%!%$%kL> "-" $rMQ0U$7$F$$$^$9!#$3$1 $O!"**gnuplot** $N%3%^%s%I%U%!%$%k$,!"$$/$D$+$N%3%^%s%I$rI8=`F~NO$+$i<u$1IU$1$k$3$H$r0UL#$7$^$9!#>\:Y $K$D$$$F$O!"0J2<;2>H: **batch/interactive** (p. 24)!#

Unix $N$h$&$K popen 4X?t$r%5%]!<%H$9$k$h$&$J%7%9%F%`$G$O!"'<' $G;O$^$k%U%!%$%kL>$K$9$k$3$H$G!"F~NO %U%!%$%k$r%Q%$%W$+$iFI$_9~$`$3$H$,$G$-$^$9!#

Nc:

```
      load 'work.gnu'
      load "func.dat"
      load "< loadfile_generator.sh"
```

**gnuplot** $X$N0z?t$H$7$FM?$($i$1$?%U%!%$%kL>$O!"0EL[$N$&$A$K **load** %3%^%s%I$K$h$C$F<B9T$5$1$^$9!#$3$1 $i$O!";XDj$5$1$?=g$K%m!<%I$5$1!"$=$N8e **gnuplot** $O=*N;$7$^$9!#

# Lower

0J2<;2>H: **raise** (p. 109)!#

# Pause

**pause** %3%^%s%I$O!"%3%^%s%I$KB3$/G$0U$NJ8;zNs$rI=<($7$?8e!";XDj$5$1$?;~4V$^$?$O!"2~9T%-!<$,2!$5$1$k $^$GBT$A$^$9!#**pause** %3%^%s%I$O!"**load** MQ$N%U%!%$%k$H6&$K;HMQ$9$k$H!"JXMx$K$J$k$G$7$g$&!#

=q<0:

```
    pause <time> {"<string>"}
    pause mouse {<endcondition>}{, <endcondition>} {"<string>"}
```

<time> $O!"G$0U$NDj?t$^$?$O<B?tCM$N<0$G$9!#**pause -1** $O2~9T%-!<$,2!$5$5$1$k$^$GBT$A!"0 $r;XDj$9$k $H0l@ZBT$?$:!"@5$N?t$r;XDj$9$k$H$=$NIC?t$@$1BT$A$^$9!#**pause 0** $O **print** $HF1$8$G$9!#

;HMQ$7$F$$$k=PNO7A<0$, **mousing** (%^%&%9 !G=) $r%5%]!<%H$7$F$$$k>l9g!"**pause mouse** $O!"%^%&%9/%j%C %/$,$"$k$+ ctrl-C $,2!$5$1$k$^$GBT$D$h$&$K$J$j$^$9!#$=$&$G$J$$=PNO7A<0!"$^$?$O%^%&%9 !G=$,M-8z$K$J$C $F$J$$>l9g **pause mouse** $O **pause -1** $HF1$8$G$9!#

0l$D!"$"$k$$$O0J#?t$N=*N;>r7o (endcondition) $, **pause mouse** $N8e$KM?$($i$1$?>l9g!"$=$N$&$A$N$I$N0l $D$G$b pause $O=*N;$7$^$9!#;XDj$G$-$k=*N;>r7o$O!"**keypress**, **button1**, **button2**, **button3**, **close**, **any** $N$$$:$1$+$G$9!#pause $,%-!<F~NO$K$h$C$F=*N;$7$?>l9g!"2!$5$1$?%-!<$NASCII %3!<%I$O MOUSE_KEY $K J]B8$5$1!"J8;z$=$1<+?H$O!"1 J8;z$NJ8;zNsCM$H$7$F MOUSE_CHAR $KJV$5$1$^$9!#**keypress** $,=*N;>r7o $N0l$D$G$"$1$P!"%[%C%H%-!< (%-!<3d$jEv$F%3%^%s%I) $OL58z$K$J$j$^$9!#**buttons3** $,=*N;>r7o$N0l$D$G$"$1 $P!"3HBg5 !G=$OL58z$K$J$j$^$9!#

$I$N>l9g$G$b%^%&%9$N:BI8$OJQ?t MOUSE_X, MOUSE_Y, MOUSE_X2, MOUSE_Y2 $KJ]B8$5$1$^$9!#0J2< ;2>H: **mouse variables** (p. 46)!#

Cm0U: **pause** %3%^%s%I$O OS $X$N%3%^%s%I$G$"$jIA2h$N0lIt$G$O$J$$$N$G!"0[$J$k=PNOAuCV$G$O[$J$kF0:n$r $9$k2DG=@-$,$"$j$^$9!#($3$1$O!"%F%-%9%H$H%0%i%U%#%C%/%9$,!"$I$N$h$&$K:.:_$9$k$+$K$h$j$^$9!#)

Nc:

```
pause -1    # 2~9T%-!<$,2!$5$1$k$^$GBT$D
pause 3     # 3 ICBT$D
pause -1  "B3$1$k$K$O return $rBG$C$F$/$@$5$$"
pause 10  "$3$1$OH~$7$/$J$$$G$9$+ ? 3 <!$N spline $G$9"
pause mouse "A*Br$7$?%G!<%?E@>e$GG$0U$N%\%?%s$r%/%j%C%/$7$F$/$@$5$$"
pause mouse keypress "M-8z$J%&%#%s%I%&Fb$G A-F $NJ8;z$rF~NO$7$F$/$@$5$$"
pause mouse button1,keypress
pause mouse any "G$0U$N%-!<!"%\%?%s$G=*N;$7$^$9"
```

0!<o$G$"$k "pause mouse key" $O!"M-8z$JIA2h%&%#%s%I%&Fb$G$NG$0U$N%-!<F~NO$K$h$C$F:F3+$5$1$^$9!#FCJL$J%-!<F~NO$^$GBT$D$h$&$K$7$?$$>l9g$O!"0J2<$N$h$&$J reread $K$h$k%k!<%W$r;H$&$3$H$,$G$-$^$9:

```
print "IA2h%&%#%s%I%&Fb$G Tab %-!<$rBG$D$HI|5"$7$^$9!#"
load "wait_for_tab"
```

%U%!%$%k "wait_for_tab" $OO0J2<$N$h$&$J$b$N$G$9:

```
pause mouse key
if (MOUSE_KEY != 9) reread
```

# Plot

**plot** $O **gnuplot** $G?^$rIA$/$?$a$N4pK\E*$J%3%^%s%I$G$9!#$=$l$O4X?t$d%G!<%?$N!"B?$/$N<oN`$N%0%i%UI=8=$rDs6!$7$^$9!# **plot** $O 2 <!85$N4X?t$d%G!<%?$rIA$/$N$K;H$o$l!" **splot** $O 3 <!85$N6JLL$d%G!<%?$N 2 <!85Ej1F$rIA$-$^$9!#

=q<0:

```
plot {<ranges>} <plot-element> {, <plot-element>, <plot-element>}
```

3FIA2hMWAG (plot-element) $O!"Dj5A (definition) $+4X?t (function) $+%G!<%? (data source) $N$$$:$l$+1 $D$K!"%*%W%7%g%s$NB0@-!"=$@5;R$J$I$,$D$$$?$b$N$G$9:

```
IA2hMWAG (plot-element):
     {<iteration>}
     <definition> | {sampling-range} <function> | <data source>
     {axes <axes>} {<title-spec>}
     {with <style>}
```

3FIA2hMWAG$N%0%i%UI=8=7A<0$O!"Nc$ ($P **with lines** $d **with boxplot** $J$I$N$h$&$K%-!<%o!<%I **with** $G7hDj$7$^$9!#0J2<;2>H: **plotting styles (p. 52)**!#

IA2h$9$k%G!<%?$O!"1 $D$N4X?t$+$i@8@.$5$l$k$b$N (G^2pJQ?t%b!<%I (parametric) $G$O 2 $D$N4X?t$+$i)!"$^$?$OO1$D$N%G!<%?%U%!%$%k$+$iF I$_9~$^$l$k$b$N!"$^$?$O;vA0$KDj5A$5$l$?L>A0IU$-%G!<%?%V%m%C%/$+$iFI$_9~$^$l$k$b$N!"$N$$$:$l$+$G$9!#%3%s%^$G6h@Z$k$3$H$G!"J#?t$N%G!<%?%U%!%$%k!"%G!<%?%V%m%C%/!"4X?t$J$I$r 1 $D$N plot %3%^%s%I$GIA2h$G$-$^$9!#0J2<;2>H: **data (p. 91)**, **inline data (p. 39)**, **functions (p. 102)**!#

4X?t!"JQ?t$NDj5A$NIA2hMWAG$O!"2hA|=PNO$r@8@.$7$^$;$s!#2<$N 3 $DL\$NNc$r;2>H$7$F$/$@$5$$!#

Nc:

```
plot sin(x)
plot sin(x), cos(x)
plot f(x) = sin(x*a), a = .2, f(x), a = .4, f(x)
plot "datafile.1" with lines, "datafile.2" with points
plot [t=1:10] [-pi:pi*2] tan(t), \
     "data.1" using (tan($2)):($3/$4) smooth csplines \
              axes x1y2 notitle with lines 5
plot for [datafile in "spinach.dat broccoli.dat"] datafile
```

0J2<;2>H: **show plot (p. 157)**!#

## <4 (axes)

<4 (axes) $O! "4 <oN `$NAH$,MxMQ$G$-$^$9; %-!<%o!<%I <axes> $O! "FCD j$ND>@~$r$I$N<4$K<\EY$r9g$o$;$k$+! " $H$$$&$3$H$rA*Br$9$k$N$K; H$o$1$^$9! #**x1y1** $O2<$N<4$H:8$N<4$r; XD j; **x2y2** $O>e$H1&$N<4$N; XD j; **x1y2** $O 2<$H1&$N<4$N; XD j; **x2y1** $O>e$H:8$N<4$N; XD j$G$9! #**plot** %3%^%s%I$G; XD j$5$1$?HO0O$O! "$3$N:G=i$N<4$NAH(2< $H:8) $K$N$_E,MQ$5$1$^$9! #

## Binary

%P%$%J%j%G!<%?%U%!%$%k:

%U%!%$%kL>$N8e$m$K **binary** $N%-!<%o!<%I$rM?$ ($J$1$1$P$$$1$^$;$s! #%U%!%$%k7A<0$K4X$9$k==J,>\:Y$J>pJs $O! "%f!<%6$,%3%^%s%I%i%$%s$+$iM?$ ($k$+! "$^$?$O%5%]!<%H$7$F$$$k **filetype** $N%P%$%J%j7A<0$N%U%!%$%k$=$1 <+?H$+$iH4$-=P$5$1$k$+$9$kI,MW$,$"$j$^$9! #%P%$%J%j%U%!%$%k$K$O! "Bg$-$/2 $D$N7A<0! "binary matrix 7A <0$H binary general 7A<0$,$"$j$^$9! #

**binary matrix** 7A<0$O! "32 %S%C%H IEEE 5,3J$NIbF0>.?tCM (float) $,2 <!8 5G[Ns$N7A$GJB$S! "$=$1$i$N:BI8 CM$rI=$99T$HNs$,DI2C$5$1$F$$$^$9! #plot %3%^%s%I$N **using** ;XD j$K$*$$$F! "1 HVL\ (column(1)) $O9TNs$N9T $N:BI8$r; 2>H$7! "2 HVL\ (column(2)) $ONs$N:BI8$r; 2>H$7! "3 HVL\ (column(3)) $O! "G[Ns$N$=$1$i$N:BI8$N>1 =j$KJ]B8$5$1$F$$$kCM$r; 2>H$7$^$9! #

**binary general** 7A<0$O! "G$0U8D$NNs$N%G!<%?$r4^$_! "$=$1$i$N>pJs$O%3%^%s%I%i%$%s$G; XD j$9$kI,MW$,$"$j $^$9! #Nc$ ($P **array**, **record**, **format**, **using** $J$I$G%5%$%:$d7A<0! "%G!<%?$N<!8 5$r; XD j$G$-$^$9! #B>$K$b! " %U%!%$%k%X%C%@FI$_Ht$P$7$?$j! "% (%s%G%#%"%s (endian) $rJQ99$9$9$k$?$a$NM-MQ$J%3%^%s%I$,$"$j$^$9$7! "G[ CV! "%G!<%?$NJQ4 9$r9T$J$&%3%^%s%I$NAH$,$"$j$^$9! #$=$1$O! "0 1MM$KI 8K\2=$5$1$?%G!<%?$N>19g! "$=$N:BI8$, %U%!%$%k$K$O4^$^$1$J$$$3$H$,NI$/$"$k$+$i$G$9! #matrix %P%$%J%j%U%!%$%k$d%F%-%9%H%G!<%?$+$i$NF~NO$H0c $&$H$3$m$G$9$,! "general %P%$%J%j$O 1,2,3 $H$$$C$? **using** %j%9%H$G@8@.$5$1$kNsHV9f$r; H$o$:! "Be$o$j$K 1 NsL\$O%U%!%$%k$N 1 NsL\! "$"$k$$$O **format** %j%9%H$G; XD j$5$1$?$b$N! "$K$J$j$^$9! #

$5$^$6$^$J binary %*%W%7%g%s$KBP$9$kBg0hE*$J%G%U%)%k%H$N@_D j$b2DG=$G! "$=$1$O **(s)plot <filename> binary ...** %3%^%s%I$KM?$ ($k%*%W%7%g%s$HA4$/F1$8=q<0$G; XD j$G$-$^$9! #$=$N=q<0$O **set datafile binary ...** $G$9! #0 1HIE*$J5,B'$H$7$F! "%G%U%)%k%H$N%Q%i%a!<%?$O%U%!%$%k$+$iH4$-=P$5$1$?%Q%i%a!<%?$G>e=q$-$5$1! " $=$1$O%3%^%s%I%i%$%s$G; XD j$5$1$?6&DL$J%Q%i%a!<%?$G>e=q$-$5$1$^$9! #

Nc$ ($P **array**, **record**, **format**, **filetype** $N **binary general** 7A<0$rFCD j$9$k$h$&$J%-!<%o!<%I$,2?$b$D$$$F $$$J$1$1$P! "%G%U%)%k%H$N%P%$%J%j7A<0$O **binary matrix** $G$9! #

general %P%$%J%j%G!<%?$O! "FCJL$J%U%!%$%kL>'-' $r; H$C$F%3%^%s%I%i%$%s$+$iF~NO$9$k$3$H$b$G$-$^$9! #$7$+ $7! "$3$1$O%-!<%\!<%I$+$i$NF~NO$r0U?^$7$?$b$N$G$O$J$/! "%Q%$%W$r; H$C$F%W%m%0%i%`$K%P%$%J%j7A<0$rJQ4 9 $5$;$k$?$a$N$b$N$G$9! #%P%$%J%j%G!<%?$K$O:G8e$rI=$95-9f$,$"$j$^$;$s$N$G! "gnuplot $O%Q%$%W$+$i%G!<%? $rFI$_9~$` >19g! "**array** ;XD j; R$G; XD j$7$??t$NE@?t$K$J$k$^$G%G!<%?$rFI$_9~$_B3$1$^$9! #>\:Y$K4X$7$F$O! " 0J2<; 2>H: **binary matrix (p. 196)**, **binary general (p. 87)**! #

**index** %-!<%o!<%I$O! "%U%!%$%k%U%)!<%^%C%H$,1 $D$N%U%!%$%k$K$D$-1 $D$N6JLL$7$+5v$5$J$$$?$a! "%5%]!<%H$5$1$^$;$s! #**every** $d **using** %U%#%k%?$O%5%]!<%H$5$1$^$9! #**using** $O! "%G!<%?$,$"$?$+$b>e$N3 $DAH$N7A $GFI$^$1$?$+$N$h$&$KF/$-$^$9! #%P%$%J%j%U%!%$%k$N `splot` $N%G%b! #

### General

%-!<%o!<%I **binary** $rC1FH$G; XD j$7$?>19g$O! "Hs0 1MM$J3J; R$r7A@.$9$k:BI8>pJs$H! "3F3J; RE@$G$NCM$NN>J}$r ; }$D%P%$%J%j%G!<%?$G$"$k$3$H$r0UL#$7 (0J2<; 2>H: **binary matrix (p. 196)**)! "B>$N7A<0$N%P%$%J%j%G!<%?$N >19g$O! "$=$N%G!<%?$N7A<0$r0UL#$9$kDI2C%-!<%o!<%I$r; XD j$9$kI,MW$,$"$j$^$9! #; DG0$J$,$i! "$3$1$i$NDI2C %-!<%o!<%I$N=q<0$OC1=c$G$O$"$j$^$;$s$,! "$=$1$G$b general %P%$%J%j%b!<%I$O! "FC$KB?NL$N%G!<%?$r gnuplot $KAw$k$h$&$J%"%W%j%1!<%7%g%s$K<h$C$F$OM-MQ$G$9! #

=q<0:

```
plot '<file_name>' {binary <binary list>} ...
splot '<file_name>' {binary <binary list>} ...
```

general %P%$%J%j7A<0$O! "%U%!%$%k9=B$$K4X$9$k>pJs$K4XO"$9$k%-!<%o!<%I! "$9$J$o$A **array**, **record**, **format**, **filetype** $J$I$r <binary list> Fb$KM?$ ($k$3$H$GM-8z$K$J$j$^$9! #$=$10J3 0$N>19g$O! "Hs0 1MM$J matrix %P%$ %J%j7A<0$H8+$J$7$^$9! #(>\:Y$K4X$7$F$O! "0J2<; 2>H: **binary matrix (p. 196)**! #)

Cm0U: 0JA0$NHG$N gnuplot $G$O! "%P%$%J%j%G! <%?MQ$N%-! <%o! <%I$N2r<a$K! "**plot** $H **splot** $G$O>/$70c$$$,$" $j$^$7$?! #$=$N0UL#$N0c$&2U=j$O! ": #8e$NHG$N gnuplot $G$O! "$=$N0lJ}$"$k$$$ON>J}$,JQ99$5$l$k2DG=@-$,$" $j$^$9! #

gnuplot $O! "Nc$($P PNG 2hA|$N$h$&$K40A4$K<+8J5-=R$5$l$kI8=`E*$J%P%$%J%j%U%!%$%k7A<0$NFI$_9~$_J}K! $r$$$/$D$+CN$C$F$$$^$9! #$=$N0lMw$O! "BPOC2hLL$G **show datafile binary** $HF~NO$9$k$3$H$G; 2>H$G$-$^$9! # $=$l$i0J30$N$b$N$K$D$$$F$O! "35G0>e$O%P%$%J%j%G! <%?$O%F%-%9%H%G! <%?$HF1MM$K9M$($k$3$H$,$G$-$^$9! #3F E@$K$O! "**using** ;XD j$GA*Br$5$l$k>pJs$NNs$,$"$j$^$9! #**format** J8;zNs$r;XD j$7$J$+$C$?>l9g! "gnuplot $O%P %$%J%j?tCM$N?t$r<**using list**> $GM?$($i$l$k:GBg$NNsHV9f$KEy$7$/<h$j$^$9! #Nc$($P! "**using 1:3** $H$9$k$H 3 Ns$:$D%G! <%?$,FI$_<h$i$l! "2 HVL\$N$b$N$OL5;k$7$^$9! #3FIA2h%9%?%$%k$K$O%G%U%)%k%H$N using ;XD j$,$" $j$^$9! #Nc$($P **with image** $O%G%U%)%k%H$G **using 1** $r! "**with rgbimage** $O%G%U%)%k%H$G **using 1:2:3** $r ;H$$$^$9! #

### Array

%P%$%J%j%U%!%$%k$NI8K\$NG[Ns$NBg$-$5$r@_Dj$7$^$9! #:BI8$O gnuplot $,@8@.$7$F$/$l$^$9! #3FJ}8~$N<!85$r I=$9?t$r;XD j$7$J$1$l$P$$$1$^$;$s! #Nc$($P **array=(10,20)** $O! "2 <!85$G:G=i$N<!85J}8~(x) $K$O 10 E@! "2 HVL\$N<!85J}8~(y) $K$O 20 E@$NI8K\2=%G! <%?$,$"$k$3$H$r0UL#$7$^$9! #%U%!%$%k$N=*N;$^$G%G! <%?$,B3$/$3 $H$r<($9$N$KI i$NCM$r;H$($^$9! #%G! <%?$<!85$, 1 $N>l9g$O! "%+%C%3$O>JN,$G$-$^$9! #J#?t$N%G! <%?$N%5%$%:;X Dj$rJ,N%$9$k$N$K! "%3%m%s$r;H$&$3$H$,$G$-$^$9! #Nc$($P **array=25:35** $O 2 $D$N 1 <!85%G! <%?$,%U%!%$%k $NCf$K$"$k$3$H$r0UL#$7$^$9! #

Cm0U: **gnuplot** %P! <%8%g%s 4.2 $G$O array=(128,128) $H$$$&=q<0$G $O$J$/! "array=128x128 $H$$$&=q<0$r;HMQ$7$F$$$^$7$?! #8E$$ =q<0$O?d>)$5$l$F$$$^$;$s! #

### Record

$3$N%-! <%o! <%I$O **array** $HF1$8=q<0$G! "F1$85 !G=$rDs6!$7$^$9! #$7$+$7 **record** $O gnuplot $K:BI8>pJs$r<+F0 @8@.$5$;$^$;$s! #$3$l$O! "$=$N$h$&$J:BI8>pJs$,! "%P%$%J%j%G! <%?%U%!%$%k$N$"$kNs$K4^$^$l$F$$$k>l9g$N$? $a$N$b$N$G$9! #

### Skip

$3$N%-! <%o! <%I$O! "%P%$%J%j%U%!%$%k$N$"$k6h2h$N%9%-%C%W$r2DG=$K$7$^$9! #Nc$($P! "$=$N%U%!%$%k$,%G! <%? NN0h$N3+;O0LCV$NA0$K 1024 %P%$%H$N%X%C%@$r; }$D$h$&$J>l9g$K$O! "0J2<$N$h$&$K$7$?$$$H;W$&$G$7$g$&:

```
plot '<file_name>' binary skip=1024 ...
```

%U%!%$%k$KJ#?t$N%l%3! <%I$,$"$k>l9g! "$=$N$=$l$>$l$KBP$9$k@hF,$N$:$i$70LCV$r;XD j$9$k$3$H$,$G$-$^$9! #Nc$($P! ":G=i$N%l%3! <%I$NA0$N 512 %P%$%H$r%9%-%C%W$7! "2 HVL\! "3 HVL\$N%l%3! <%I$NA0$N 256 %P%$%H$r%9 %-%C%W$9$k$K$O0J2<$N$h$&$K$7$^$9:

```
plot '<file_name> binary record=356:356:356 skip=512:256:256 ...
```

### Format

%G%U%)%k%H$N%P%$%J%j7A<0$O! "C1@:EYIbF0>.?t (float) $,0l$D! "$G$9! #$=$l$r$h$j=@Fp$K@_Dj$9$k$?$a$K! "$3$N format $GJQ?t$N%5%$%:$K4X$9$k>\:Y$J>pJs$r;XD j$G$-$^$9! #Nc$($P **format="%uchar%int%float"** $O! ":G =i$N using Ns$H$7$FId9f$J$7J8;z7?JQ?t (unsigned char) $r! "2 HVL\$NNs$OId9f$D$-@0?t (int) $r! "3 HVL\$NNs $OC1@:EYIbF0>.?t (float) $r;XD j$7$F$$$^$9! #$b$7%5%$%:;XD j;R$N?t$,:GBgNs?t$h$j>.$5$$>l9g$O! ";D$j$NNs$N JQ?t%5%$%:$O0EL[$N$&$A$K:G8e$KM?$($?JQ?t%5%$%:$KEy$7$/<h$i$l$^$9! #

$5$i$K **using** ;XD jF1MM! "* J8;z$,$D$$$?FI$_<N$F$kNs$r=q<0$K;XD j$9$k$3$H$b$G$-$^$9$7! "7+$jJV$7%U%#! < %k%I$X$N2s?t;XD j$K$h$C$F0EL[$N7+$jJV$7$r;XD j$9$k$3$H$b$G$-$^$9! #Nc$($P! "**format="%*2int%3float"** $O! "3 $D$N<B?t%G! <%?$rFI$`A0$K! "2 $D$N@0?t%G! <%?$rFI$_<N$F$^$9! #; HMQ$G$-$kJQ?t%5%$%:$N0lMw$O! "**show datafile binary datasizes** $G8+$k$3$H$,$G$-$^$9! #$=$l$i$O! "$=$l$>$l$N%3%s%Q%$%k$K$h$C$F$=$N%P%$%H%5 %$%:$H$H$b$K%^%7%s$K0MB8$9$kJQ?tL>$N%0%k! <%W$H! "%^%7%s$K0MB8$7$J$$$JQ?tL>$N%0%k! <%W$KJ,$+$l$F$$$^$9! #

### Endian

%U%!%$%k$N%P%$%J%j%G!<%?$N%(%s%G%#%"%s$O!"gnuplot $,F0:n$9$k%W%i%C%H%[!<%`$N%(%s%G%#%"%s$H$O0[$J$k>l9g$bNI$/$"$j$^$9!#$$$/$D$+$N;XDj$Ggnuplot $,%P%$%H$r$I$N$h$&$K07$&$+$r@)8f$G$-$^$9!#Nc$($P**endian=little** $O!"%P%$%J%j%U%!%$%k$r!"$=$N%P%$%H$NJB$S$,>.$5$$7e$+$iBg$-$$7e$XJB$s$G$$$k$H8+$J$5$l$^$9!#%*%W%7%g%s$O0J2<$N$b$N$,;H$($^$9!#

| | |
|---|---|
| `little:` | >.$5$$7e$+$iBg$-$J7e$XJB$V |
| `big:` | Bg$-$J7e$+$i>.$5$J7e$XJB$V |
| `default:` | `compiler` $HF1$8%(%s%G%#%"%s$H8+$J$9 |
| `swap (swab):` | %(%s%G%#%"%s$rJQ99$9$k ($*$+$7$$$h$&$J$i$3$l$r<br>;H$C$F$_$F$/$@$5$$) |

gnuplot $O!"%3%s%Q%$%k;~$K%*%W%7%g%s$,;XDj$5$l$F$$$l$P!""middle" ($d"pdp") %(%s%G%#%"%s$b%5%]!<%H$G$-$^$9!#

### Filetype

gnuplot $O!"$$$/$D$+I8=`E*$J%P%$%J%j%U%!%$%k7A<0$K$D$$$F$O!",MW$J>pJs$r$=$N%U%!%$%k$+$iH4$-=P$9$3$H$,$G$-$^$9!#Nc$($P "format=edf" $O ESRF %X%C%@!<%U%!%$%k7A<0$N%U%!%$%k$H$7$FFI$_9~$_$^$9!#8=:_%5%]!<%H$7$F$$$k%U%!%$%k7A<0$K$D$$$F$O!"**show datafile binary filetypes** $G8+$F$/$@$5$$!#

FCJL$J%U%!%$%k7A<0$H$7$F**auto** $,$"$j!"$3$N>l9g gnuplot $O%P%$%J%j%U%!%$%k$N3HD%;R$,!"%5%]!<%H$5$l$F$$$k7A<0$NI8=`E*$J3HD%;R$G$"$k$+$r%A%'%C%/$7$^$9!#

%3%^%s%I%i%$%s%-!<%o!<%I$O%U%!%$%k$+$iFI$_<h$k@_Dj$r>e=q$-$9$k$N$K;H$o$l!"%U%!%$%k$+$iFI$_<h$k@_Dj$O%G%U%)%k%H$N@_Dj$r>e=q$-$7$^$9!#0J2<;2>H:**set datafile binary (p. 125)**!#

**Avs** **avs** $O!"<+F0E*$KG’<1$5$l$k2hA|%$%a!<%8$KBP$9$k%P%$%J%j%U%!%$%k$N7?$N0l$D$G$9!#AVS $OHs>oC1=c$J%U%)!<%^%C%H$G!"%"%W%j%1!<%7%g%s4V$G$d$j$H$j$9$k$N$K:G$bE,$7$F$$$^$9!#$3$l$O!"2 $D$N long (xwidth $H ywidth) $H!"$=$N8eB3$/%T%/%;%k$NNs$+$i@.$j!"$=$N3F%T%/%;%k$O alpha/red/green/blue $N 4 %P%$%H$+$i@.$j$^$9!#

**Edf** **edf** $O!"<+F0E*$KG’<1$5$l$k2hA|%$%a!<%8$KBP$9$k%P%$%J%j%U%!%$%k$N7?$N0l$D$G$9!#EDF $O ESRF %G!<%?%U%)!<%^%C%H (ESRF Data Format) $r0UL#$7$F$$$F!"$=$l$O edf $H ehf $NN>J}$N7A<0$r%5%]!<%H$7$F$$$^$9 (8e<T$O ESRF Header Format)!#2hA|$N;HMQ$K4X$9$k>\$7$$>pJs$O0J2<$G8+$D$+$k$G$7$g$&:

```
http://www.edfplus.info/specs
```

**Png** gnuplot $, png/gif/jpeg =PNOMQ$K libgd %i%$%V%i%j$r;H$&$h$&$K%$%s%9%H!<%k$5$l$F$$$k>l9g!"$=$l$i$N2hA|7A<0$r%P%$%J%j%U%!%$%k$H$7$FFI$_9~$`$3$H$b$G$-$^$9!#0J2<$N$h$&$JL@<(E*$J%3%^%s%I

```
plot 'file.png' binary filetype=png
```

$r;H$&$3$H$b$G$-$^$9$7!"$"$i$+$8$a0J2<$N$h$&$K@_Dj$7$F!"3HD%;R$+$i<+F0E*$K2hA|7A<0$r<+F0E*$KG’<1$5$;$k$3$H$b$G$-$^$9!#

```
set datafile binary filetype=auto
```

### Keywords

0J2<$N%-!<%o!<%I (keyword) $O!"%P%$%J%j%U%!%$%k$+$i:BI8$r@8@.$9$k$H$-$K$N$_E,MQ$5$l$^$9!#$D$^$j!"binary array, matrix, image $N8D!9$NMWAG$rFCDj$N x,y,z $N0LCV$X$NG[CV$N@)8f$N$?$a$N$b$N$G$9!#

**Scan** gnuplot $,%P%$%J%j%U%!%$%k$r$I$N$h$&$KAv::$9$k$+!"$H$$$&$3$H$H<B:]$NIA2h$G8+$i$l$k<4$NJ}8~$H $N4V$N4X78$K$D$$$F$OB?$/$N:.Mp$,5/$3$jF@$^$9!#$=$N:.Mp$r8:$i$9$K$O!"gnuplot $O%P%$%J%j%U%!%$%k$r">o$K" E@/@~/LL!"$^$?$OB.$$/IaDL/CY$$!"$HAv::$9$k$H9M$($k$H$$$$$G$7$g$&!#$3$N%-!<%o!<%I$Ognuplot $K!"$=$NAv::$NJ}8~$rIA2hFb$N$I$N:BI8J}8~(x/y/z) $K3d$jEv$F$k$+$r;XDj$7$^$9!#;XDj$O2 $D!"$^$?$O3 $D$NJ8;z$NJB$S$GI=8=$7!":G=i$NJ8;z$,E@$K!"<!$NJ8;z$,@~$K!"3 $DL\$NJ8;z$,LL$KBP1~$7$^$9!#Nc$($P!"**scan=yx** $O!":G$bB.$$Av::(E@$NA*Br) $Oy J}8~$KBP1~$7!"IaDL$NB.$5$NAv::(@~$NA*Br) $,x J}8~$KBP1~$9$k$3$H$r 0UL#$7$^$9!#

IA2h%b!<%I$, **plot** $N>l9g!";XDj$K$Ox $Hy $N2 $D$NJ8;z$r;H$&$3$H$,$G$-!"**splot** $KBP$7$F$Ox, y, z $N3 $D$NJ8;z$r;H$&$3$H$,$G$-$^$9!#

3d$jEv$F$K4X$7$F$O!"E@/@~/LL$+$iD>8r:BI8J}8~$X$N$_$K@)8B$9$kFbIt;v>p$OJL$K$"$j$^$;$s!#$3$NM}M3$G!"1_Cl:BI8$X$N3d$jEv$F$N$?$a$N;XDj;R$bMQ0U$5$l$F$$$F!"$=$l$i$OD>8r:BI8$Nx, y, z $KN`;w$7$?7A$Gt (3QEY), r, z $H$J$C$F$$$^$9!#

**Transpose** **scan=yx**!"$^$?$O**scan=yxz** $HF1$8$G$9!#$9$J$o$A!"$3$l$OF~NO;~$NAv::9T$N%T%/%;%k$X$N 3d$jEv$F$K1F6A$rM?$($^$9!#I=<($9$k:]$K2hA|$rE>CV$9$k$K$O!"0J2<$N$h$&$K$7$F$_$F$/$@$5$$:

```
plot 'imagefile' binary filetype=auto flipx rotate=90deg with rgbimage
```

**Dx, dy, dz** gnuplot $,:BI8$r@8@.$9$k>l9g!"$=$N4V3V$O$3$l$i$N%-!<%o!<%I$G;XDj$5$l$?$b$N$,;HMQ$5$l$^$9!#Nc$($P**dx=10 dy=20** $Ox J}8~$K10!"y J}8~$K20 $N4V3V$GI8K\2=$5$l$?$3$H$r0UL#$7$^$9!#**dy** $O**dx** $,$J$1$l$P;H$($^$;$s!#F1MM$K**dz** $O**dy** $,$J$1$l$P;H$($^$;$s!#$b$7%G!<%?$N<!85$,;XDj$7$?%-!<%o!<%I$N<!85$h$j$bBg$-$$>l9g!";D$j$N<!85J}8~$N4V3V$O!";XDj$5$l$?:G$b9b$$<!85$N$b$N$HF1$8CM$,;HMQ$5$l$^$9!#Nc$($P2hA|$,%U%!%$%k$+$iFI$_9~$^$l!"**dx=3.5** $N$_;XDj$5$l$?>l9g!"gnuplot $Ox J}8~$N4V3V$by J}8~$N4V3V$b3.5 $r;HMQ$7$^$9!#

0J2<$N%-!<%o!<%I$b:BI8$N@8@.;~$K$N$_E,MQ$5$l$^$9!#$7$+$7!"0J2<$N$b$N$Omatrix %P%$%J%j%U%!%$%k$K$b ;H$o$l$^$9!#

**Flipx, flipy, flipz** %P%$%J%j%G!<%?%U%!%$%k$NAv::J}8~$, gnuplot $NAv::J}8~$H0lCW$7$J$$$3$H$,$?$^$K$"$j$^$9!#$3$l$i$N%-!<%o!<%I$O!"$=$l$>$l x, y, z J}8~$N%G!<%?$NAv::J}8~$r5U8~$-$K$7$^$9!#

**Origin** gnuplot $OE>CV(transpose) $dH?E>(flip) $K$*$$$F:BI8$r@8@.$9$k>l9g!">o$KG[Ns$N:82<$NE@$,86E@$K$J$k$h$&$K$7$^$9!#$9$J$o$A!"%G!<%?$,!"E>CV$dH?E>$N9T$J$o$l$?8e$ND>8r:BI87O$NBh1 >]8B$KMh$k$h$&$K $7$^$9!#

G[Ns$r%0%i%U$N$=$NB>$N>l=j$KG[CV$7$?$$>l9g!"**origin** %-!<%o!<%I$G;XDj$7$?>l=j$Kgnuplot $OG[Ns$N:82<$NE@$r9g$o$;$^$9!#$=$N;XDj$O!"**plot** $G$O2 $D$N:BI8$NAH!"**splot** $G$O3 $D$N:BI8$NAH$r;XDj$7$F$/$@$5$$!#Nc$($P**origin=(100,100):(100,200)** $O!"0l$D$N%U%!%$%k$K4^$^$l$k2 $D$N%G!<%?$KBP$9$k;XDj$G!"2 <!85 $NIA2h$KBP$9$k;XDj$G$9!#2 $DL\$NNc$H$7$F**origin=(0,0,3.5)** $r$"$2$k$H!"$3$l$O3 <!85IA2hMQ$N;XDj$G$9!#

**Center** **origin** $H;w$F$$$^$9$,!"$3$N%-!<%o!<%I$O!"G[Ns$NCf?4$,$3$N%-!<%o!<%I$G;XDj$7$?E@$K$J$k$h $&$KG[CV$7$^$9!#Nc$($P**center=(0,0)** $N$h$&$K$7$^$9!#G[Ns$N%5%$%:$, **Inf** $N$H$-$Ocenter $OE,MQ$5$l$^ $;$s!#

**Rotate** E>CV(transpose) $HH?E>(flip) %3%^%s%I$O:BI8$N@8@.$H:BI8<4$NJ}8~$K$"$k<o$N=@Fp@-$rM?$($F$/$l $^$9!#$7$+$7!"3QEY$K4X$9$k40A4$J@)8f$O!"2 <!85$N2sE>3Q$r5-=R$7$?2sE>3Q%Y%/%H%k$rM?$($k$3$H$K$h$j9T $J$&$3$H$,2DG=$K$J$j$^$9!#

%-!<%o!<%I **rotate** $O, **plot**, **splot** $NN>J}$G!"2 <!85LL$KBP$7$FE,MQ$5$l$^$9!#2sE>$O:BI8J?LL$N@5$N3QEY$K 4X$7$F9T$J$o$l$^$9!#

3QEY$O!"%i%8%"%sC10L$G$9$,!"pi $d degrees $NG\?t$H$7$F$N%i%8%"%s$G$bI=8=$G$-$^$9!#Nc$($P!"**rotate=1.5708**, **rotate=0.5pi**, **rotate=90deg** $O$9$Y$FF1$80UL#$G$9!#

**origin** $,;XDj$5$l$?>l9g!"2sE>$OJ?9T0\F0$NA0$K:82<$NE@$rCf?4$K$7$F9T$J$o$l$^$9!#$=$l0J30$G$O2sE>$OG[ Ns$NCf?4 (**center**) $K4X$7$F9T$J$o$l$^$9!#

**Perpendicular** **splot** $K4X$7$F2sE>%Y%/%H%k$N@_Dj$,!"%Y%/%H%k$rI=8=$9$k 3 $D$N?t;z$NAH$r;XDj$9$k$3$H$G<BAu$5$l$F$$$F!"$3$N%Y%/%H%k$O 2 <!85$N xy J?LL$KBP$7$F8~$-IU$1$i$l$?K!@~%Y%/%H%k (perpendicular) $rI=$7$F$$$^$9!#$b$A$m$s$=$N%G%U%)%k%H$O (0,0,1) $G$9!#rotate $H perpendicular $NN>J}$r;XDj$9$k$3$H$K$h$j!"3 <!856u4VFb$GL5?t$NJ}8~$X%G!<%?$r8~$-IU$1$i$l$k$3$H$K$J$j$^$9!#

$^$::G=i$K 2 <!85$N2sE>$,9T$J$o$l!"$=$N<!$K 3 <!85$N2sE>$,9T$J$o$l$^$9!#$D$^$j!"R' $r$"$k3Q$K$h$k 2 x 2 $N2sE>9TNs$H$7!"P $r (0,0,1) $r (xp,yp,zp) $X;R8a@~J}8~$K2sE>$5$;$k 3 x 3 $N9TNs$H$7!"R' $r:8>e$NItJ,9TNs$H$7$F;}$A 3,3 @.J,$, 1 $G$=$NB>$N@.J,$, 0 $G$"$k$h$&$J9TNs ($D$^$j z <4<~$j$N2sE>9TNs) $H$9$l$P!"$3$NJQ49$rI=$99TNs$K$h$k4X78<0$O v' = P R v $H$J$j$^$9!#$3$3$G!"v $O%G!<%?%U%!%$%k$+$iFI$_9~$^$l$?3 x 1 $NOlCV%Y%/%H%k$G$9!#%U%!%$%k$N%G!<%?$, 3 <!85E*$J$b$N$G$J$$>l9g$O!"O@M}E*$J%k!<%k$,E,MQ$5$l$F 3 <!856u4VFb$N%G!<%?$H8+$J$5$l$^$9 (Nc$($P!"DL>o$O z :BI8$O 0 $H$5$l!"xy J?LIFb$N 2 <!85%G!<%?$H8+$J$5$l$^$9)!#

## %G!<%? (data)

%U%!%$%k$KG<$a$i$l$?N%;6E*$J%G!<%?$O!"**plot** %3%^%s%I%i%$%s>e$G!"$=$N%G!<%?%U%!%$%kL> (<datafile>) $rC10l0zMQId$^$?$OFs=E0zMQId$G0O$s$G;XDj$9$k$3$H$K$h$C$FI=<($G$-$^$9!#

=q<0:

```
plot '<file_name>' {binary <binary list>}
                   {{nonuniform} matrix}
                   {index <index list> | index "<name>"}
                   {every <every list>}
                   {skip <number-of-lines>}
                   {using <using list>}
                   {smooth <option>}
                   {bins <options>}
                   {volatile} {noautoscale}
```

=$@5;R$N **binary**, **index**, **every**, **skip**, **using**, **bins**, **smooth** $O!"$=$l$>$l$KJ,$1$F@bL@$7$^$9!#4JC1$K8@$&$H!"**binary** $O%G!<%?Ns$r%P%$%J%j%U%!%$%k$+$i<hF@$G$-$k$h$&$K$7!"**index** $O%^%k%A%G!<%?=89g%U%!%$%k$+$i$I$N%G!<%?=89g$rI=<($9$k$N$+$rA*$S!"**every** $,!"0l$D$N%G!<%?=89g$+$i$I$NE@$rI=<($9$k$N$+$rA*$S!"**using** $O0l9T$+$i$I$NNs$r2r<a$9$k$N$+$r7hDj$7!"$=$7$F **smooth** $,!"C1=c$JJd4V$H6a;w$r9T$$$^$9!#**bins** $O8D!9$NF~NOE@$r x $K1h$&EyI}$N6h4V$K;EJ,$1!"3F6h4V$K0l$D$@$1$NN_@QCM$rIA2h$7$^$9!#

**splot** $b$h$/;w$?=q<0$r;H$$$^$9$,!"**smooth** %*%W%7%g%s$O%5%]!<%H$7$F$$$^$;$s!#

%-!<%o!<%I **noautoscale** $O!"<+F0E*$K<4$NHO0O$,7hDj$5$l$k5!G=$,M-8z$G$"$k>l9g$K!"$3$NIA2h$r9=@.$9$k%G!<%?E@$K$D$$$F$O!"$=$l$rL5;k$5$;$k (<+F0=L<\5!G=$N7W;;BP>]$+$i30$9) $h$&$K$7$^$9!#

%F%-%9%H%G!<%?%U%!%$%k:

%G!<%?%U%!%$%k$O!"0l9T$K$D$->/$J$/$H$b0l$D$N%G!<%?E@$r4^$`I,MW$,$"$j$^$9 (**using** $O0l9T$+$i0l$D$N%G!<%?%]%$%s%H$rA*$V$3$H$,$G$-$^$9)!#%# (VMS $G$O!) $G;O$^$k9T$O!"%3%a%s%H$H$7$F07$o$l!"L5;k$5$l$^$9!#3F%G!<%?E@$O!"(x,y) $NAH$rI=$7$^$9!#% (%i!<%P!<!"$^$?$O@^$l@~I=<(IU% (%i!<%P!<$N **plot** $G$O (0J2<;2>H: **errorbars (p. 128)**, **errorlines (p. 101)**))!"3F%G!<%?E@$O!"(x,y,ydelta), (x,y,ylow,yhigh), (x,y,xdelta), (x,y,xlow,xhigh), (x,y,xlow,xhigh,ylow,yhigh) $N$$$:$l$+$r0UL#$7$^$9!#

$I$s$J>l9g$G$b!"=q<0$N;XDj;R$, **using** %*%W%7%g%s$K$h$C$FM?$($i$l$F$$$J$1$l$P!"%G!<%?%U%!%$%k$N3F9T$N?t;z$O!"% [%o%$%H%9%Z!<%9 (0l$D$^$?$OJ#?t$N6uGr$+%?%V) $K$h$C$F6h@Z$i$l$F$$$kI,MW$,$"$j$^$9!#$3$N% [%o%$%H%9%Z!<%9$O!"3F9T$rNs$N9`L\$K6h@Z$j$^$9!#$?$@$7!"Fs=E0zMQId$G0O$^$l$?% [%o%$%H%9%Z!<%9$ONs$N4*Dj$G$OL5;k$5$l!"$h$C$F<!$N$h$&$J%G!<%?9T$O 3 Ns!"$H8+$J$5$l$^$9:

```
      1.0 "second column" 3.0
```

%G!<%?$O!";X?tIt$K e, E $NJ8;z$r$D$1$?;X?tI=5-$G=q$+$l$F$$$F$b9=$$$^$;$s!#%3%^%s%I **set datafile fortran** $,M-8z$J>l9g$O!"fortran $N;X?t;XDj;R d, D, q, Q $b;H$($^$9!#

I,MW$G$"$k$N$O$?$@0l$D$NNs (y $NCM) $N$_$G$9!#$b$7 x $NCM$,>JN,$5$l$?$i!"**gnuplot** $O$=$l$r 0 $G;O$^$k@0?tCM$H$7$FMQ0U$7$^$9!#

%G!<%?%U%!%$%k$K$*$$$F!"%V%i%s%/9T (6uGr$H2~9T!"I |5"0J30$KJ8;z$r4^$^$J$$9T) $O=EMW$G$9!#

1 9T$N%V%i%s%/9T$O!"**plot** $KITO"B3$r;X<($7$^$9; %V%i%s%/9T$K$h$C$F6h@Z$i$l$?E@$O@~$G7k$P$l$k$3$H$O$"$j$^$;$s (line style $G=q$+$l$F$$$k>l9g$K$O)!#

2 9T$N%V%i%s%/9T$O!"JL!9$N%G!<%?=89g4V$N6h@Z$j$r<($7$^$9!#0J2<;2>H: **index (p. 94)**!#

$b$7 autoscale $N>uBV$G$"$l$P (0J2<;2>H: **set autoscale (p. 114)**)!"<4$OA4$F$N%G!<%?%]%$%s%H$r4^$`$h$&$K<+F0E*$K0z$-?-$P$5$l$F!"L\@9$j$,=q$+$l$k>uBV$J$i$PA4$F$NL\@9$j$,%^!<%/$5$l$^$9!#$3$l$O!"2 $D$N7k2L$r0z$-5/$3$7$^$9: i) **splot** $G$O!"6JLL$N3Q$OD1LL$N3Q$K0lCW$7$F$$$J$$$3$H$,$"$j$^$9!#$3$N>l9g!"=D$N@~$O=q$+$l$k$3$H$O$"$j$^$;$s!#ii) 2 <dN`$N<4$G$N!"F1$8 x $NHO0O$N%G!<%?$NI=<($N:]!"$b$7 x2 $N<4$KBP$9$kL\@9$j$,=q$+$l$F$$$J$$>l9g$O!"x :BI8$,$"$C$F$$$J$$3$H$,$"$j$^$9!#$3$l$O x <4 (x1) $OA4$F$NL\@9$j$K$^$G<+F0E*$K0z$-1d$P$5$l$k$N$KBP$7!"x2 <4$O$=$&$G$O$J$$$+$i$G$9!#<!$NNc$G$=$NLdBj$r8+$k$3$H$,$G$-$^$9:

```
reset; plot '-', '-' axes x2y1
1 1
19 19
e
1 1
19 19
e
```

$3$l$rHr$1$k$K$O!"**set autoscale** %3%^%s%I$N **fixmin/fixmax** %*%W%7%g%s$r;H$&$3$H$,$G$-$^$9!#$3$l$O!"<!$NL\@9$j$N9o$_$K9g$&$h$&$K<4$NHO0O$r<+F0E*$K3HD%$9$k5!G=$rL58z$K$7$^$9!#

%i%Y%k$N:BI8$HJ8;zNs$b%G!<%?%U%!%$%k$+$iFI$_9~$`$3$H$,$G$-$^$9 (0J2<;2>H: **labels (p. 64)**)!#

### Bins

;n83CJ3,$N5!G= (;EMM$N:Y$+$$ItJ,$O!":#8e$NHG$GJQ99$9$k2DG=@-$"$j)!#=q<0:

```
plot 'DATA' using <XCOL> {:<YCOL>} bins{=<NBINS>}
     {binrange [<LOW>:<HIGH>]} {binwidth=<width>}
```

**plot** %3%^%s%I$KBP$9$k%*%W%7%g%s **bins** $O!":G=i$K85$N%G!<%?$r!"x <4>e$GEy$7$$I}$r;}$D$$$/$D$+$NH" (%S%s) $K3d$jEv$F!"$=$7$FH"Kh$K0l$D$NCM$N$_$rIA2h$7$^$9!#H"$N?t$N%G%U%)%k%HCM$O!"**set samples** $G7hD j$7$^$9$,$3$l$O plot %3%^%s%I$G%S%s$N?t$rL@<(E*$K;XDj$9$k$3$H$GJQ99$G$-$^$9!#

binrange $r;XDj$7$J$$$H!"HO0O$O 'DATA' Fb$NCM$NN>C<$r<h$j$^$9!#

H"$NI}$O!";XDj$7$?HO0O$HH"$N?t$+$i<+F0E*$K7W;;$7!"3FE@$r 0 $+$i NBINS-1 $^$G$NH"$K3d$jEv$F$^$9:

```
BINWIDTH = (HIGH - LOW) / (NBINS-1)
xmin = LOW - BINWIDTH/2
xmax = HIGH + BINWIDTH/2
first bin holds points with (xmin <= x < xmin + BINWIDTH)
:G=i$NH"$O (xmin <= x < xmin + BINWIDTH) $NHO0O$NE@$rJ];}
:G8e$NH"$O (xmax-BINWIDTH <= x < xman) $NHO0O$NE@$rJ];}
3FE@$O i = floor(NBINS * (x-xmin)/(xmax-xmin)) HV$NH"$K3d$jEv$F
```

$=$l$H$OJL$K!"8GDjI}$NH"$r;XDj$9$k$3$H$b2DG=$G$9!#$=$N>l9g!"H"$N?t (nbins) $O!"E@$NHO0OA4BN$K$o$?$k:G>.$NH"$N?t$H$J$j$^$9!#

H"$N=PNO$O!"$=$NCfE@$GIA2h!"$^$?$OI=$K$5$l$^$9!#Nc$($P gnuplot $,>e$N$h$&$KH"$NI}$r7W;;$9$k>l9g!":G=i$NH"$N x :BI8$N=PNO$O x=LOW $G$"$j!"x=xmin $G$O$"$j$^$;$s!#

using L?Na$G0l$D$NNs$N$_$r;XDj$7$?>l9g!"3F%G!<%?E@$O!"$=$N x :BI8CM$KBP$9$kH"$N9g7WCM$K1 $@$14sM?$7$^$9!#2 NsL\$r;XDj$9$k$H!"$=$NH"$N9g7WCM$K$O 2 NsL\$NCM$,DI2C$5$l$^$9!#$h$C$F!"0J2<$N 2 $D$N plot %3%^%s%I$OF1$8$K$J$j$^$9:

```
plot 'DATA" using N bins=20
set samples 20
plot 'DATA' using (column(N)):(1)
```

4XO"$9$kIA2h%9%?%$%k$K4X$7$F$O!"0J2<;2>H: **smooth frequency (p. 96)**,**smooth kdensity (p. 96)**!#

### Every

%-!<%o!<%I **every** $O!"IA2h$9$k%G!<%?$r%G!<%?=89g$+$i<~4|E*$K%5%s%W%j%s%0$9$k$3$H$r2DG=$K$7$^$9!#

$3$3$G$O!V%]%$%s%H!W$O%U%!%$%kCf$N1 $D$N9T$K$h$C$FDj5A$5$l$k%G!<%?$H$7!"%G!<%?$N!V%V%m%C%/!W$O!"A0 8e$N%V%m%C%/$H6u9T$G6h@Z$i$l$kO"B3$7$?9T$N=89g$r0UL#$9$k$3$H$H$7$^$9!#

=q<0:

```
        plot 'file' every {<%]%$%s%HA}J,>}
                            {:{<%V%m%C%/A}J,>}
                              {:{<3+;O%]%$%s%H>}
                                {:{<3+;O%V%m%C%/>}
                                  {:{<=*N;%]%$%s%H>}
                                    {:<=*N;%V%m%C%/>}}}}}
```

IA2h$9$k%G!<%?%]%$%s%H$O!"< 3+;O%]%$%s%H > $+$i < =*N;%]%$%s%H > $^$G < %]%$%s%HA}J,> $NA}2C$GA*$S!" %V%m%C%/$O < 3+;O%V%m%C%/ > $+$i < =*N;%V%m%C%/ > $^$G < %V%m%C%/A}J,> $NA}2C$GA*$S$^$9!#

3F%V%m%C%/$N:G=i$N%G!<%?$O!"%U%!%$%kCf$N:G=i$N%V%m%C%/$HF1$8$h$&$K!!"V0 HV!W$H?t$($^$9!#

%W%m%C%H$G$-$J$$>pJs$r4^$`9T$b%+%&%s%H$9$k$3$H$KCm0U$7$F2<$5$$!#

$$$/$D$+$N?t;z$O>JN,$G$-$^$9; A}J,$N%G%U%)%k%H$O1 !"3+;O$NCM$O:G=i$N%]%$%s%H$+:G=i$N%V%m%C%/!"$=$7 $F=*N;$NCM$O:G8e$N%]%$%s%H$+:G8e$N%V%m%C%/$K@_Dj$7$^$9!#**every** $N%*%W%7%g%s$, ':' $G=*$o$k$N$O5v$5$l $F$$$^$;$s!#**every** $r;XDj$7$J$1$l$P!"A4$F$N9T$NA4$F$N%]%$%s%H$r%W%m%C%H$7$^$9!#

Nc:

```
      every :::3::3    # 4 HVL\$N%V%m%C%/$@$1A*$S$^$9 (0 HV$,:G=i)
      every :::::9     # :G=i$N 10 %V%m%C%/$rA*$S$^$9
      every 2:2        # 1 $D$*$-$N%V%m%C%/$G 1 $D$*$-$N%]%$%s%H$rA*$S
                       # $^$9
      every ::5::15    # $=$l$>$l$N%V%m%C%/$G%]%$%s%H 5 $+$i 15 $^$G$r
                       # A*$S$^$9
```

;2>H: C1=c$J plot %G%b (simple.dem)

, HsG^2pJQ?t%b!<%I$G$N splot %G%b

, G^2pJQ?t%b!<%I$G$N splot %G%b

!#

### %G!<%?%U%!%$%k$NNc (example)

<!$NNc$O!"%U%!%$%k "population.dat" Cf$N%G!<%?$HM}O@6J@~$r?^$K$9$k$b$N$G$9!#

```
     pop(x) = 103*exp((1965-x)/10)
     set xrange [1960:1990]
     plot 'population.dat', pop(x)
```

%U%!%$%k "population.dat" $O<!$N$h$&$J%U%!%$%k$G$9!#

```
     # Gnu population in Antarctica since 1965
        1965   103
        1970   55
        1975   34
        1980   24
        1985   10
```

binary $NNc:

```
     # 2 $D$N float $NCM$rA*Br$7 (2 $DL\$NCM$OL50UL#)!"0lJ}$rF I$_<N$F!"
     # 0l$D$*$-$N float CM$rL58B$KD9$/B3$/ 1 <!85%G!<%?$H$7$F;HMQ
     plot '<file_name>' binary format="%float%*float" using 1:2 with lines

     # %G!<%?%U%!%$%k$+$i:BI8$r@8@.$9$k$N$KI,MW$J>pJs$r$9$Y$F$=$N%X%C
     # %@$K4^$s$G$$$k EDF %U%!%$%k$N>l9g
     plot '<file_name>' binary filetype=edf with image
     plot '<file_name>.edf' binary filetype=auto with image
```

```
# 3 $D$NId9f$J$7J8;z7?@0?tCM (unsigned char) $r@8$N RGB 2hA|$N?'
# @.J,$H$7$FA*Br$7!"y J}8~$OH?E>$5$;2hA|$NJ}8~$r:BI8J?LL>e$GJQ99
# $9$k (:8>e$,86E@$K$J$k$h$&$K)!#%T%/%;%k$N4V3V$b;XDj$7!"%U%!%$
# %k$K$O 2 $D$N2hA|$,4^$^$l$F$$$F!"$=$N$&$A0l$D$O origin $GJ?9T
# 0\F0$9$k!#
plot '<file_name>' binary array=(512,1024):(1024,512) format='%uchar' \
     dx=2:1 dy=1:2 origin=(0,0):(1024,1024) flipy u 1:2:3 w rgbimage
```

```
# 4 $D$NJL$N%G!<%?$+$i$J$j!":BI8>pJs$b%G!<%?%U%!%$%k$K4^$^$l$F$$
# $k!#%U%!%$%k$O gnuplot $,<B9T$5$l$F$$$k%7%9%F%`$H$O0[$J$k% (%s
# %G%#%"%s$G@8@.$5$l$F$$$k!#
splot '<file_name>' binary record=30:30:29:26 endian=swap u 1:2:3
```

```
# F1$8F~NO%U%!%$%k$G!":#2s$O 1 HVL\$H 3 HVL\$N%l%3!<%I$r%9%-%C%W
splot '<file_name>' binary record=30:26 skip=360:348 endian=swap u 1:2:3
```

0J2<;2>H **binary matrix (p. 196)**!#

### Index

%-!<%o!<%I **index** $O!"IA2hMQ$KJ#?t$N%G!<%?=89g$r;}$D%U%!%$%k$+$i!"FCDj$N%G!<%?=89g$rA*Br$9$k$3$H$r2DG=$K$7$^$9!#

=q<0:

```
plot 'file' index { <m>{:<n>{:<p>}} | "<name>" }
```

%G!<%?=89g$O 2 9T$N6uGr$GJ,N%$5$l$F$$$^$9!#**index <m>** $O <m> HVL\$N=89g$@$1$rA*Br$7$^$9; **index <m>:<n>** $O <m> $+$i <n> $^$G$N%G!<%?=89g$NA*Br; **index <m>:<n>:<p>** $O!"<m>, <m>+<p>, <m>+2<p>, $J$I!"<p> $*$-$N=89g$rA*Br$7!"=89g <n> $G=*N;$7$^$9!#C 8@8l$NE:;z (index) $NIU$1J}$K=>$$!"index 0 $O$=$N%U%!%$%k$N:G=i$N%G!<%?=89g$r0UL#$7$^$9!#Bg$-$9$.$k index $N;XDj$K$O% (%i!<%a%C%;!<%8$,JV$5$l$^$9!#<p> $r;XDj$7!"<n> $r6uMs$K$7$?>l9g!"<p> Kh$N%G!<%?$r%U%!%$%k$N:G8e$^$GFI$_9~$_$^$9!#**index** $r;XDj$7$J$$>l9g$O!"%U%!%$%k$N%G!<%?A4BN$rC10l$N%G!<%?=89g$H$7$FIA2h$7$^$9!#

Nc:

```
plot 'file' index 4:5
```

%U%!%$%k$N3FE@$KBP$7$F!"$=$l$,4^$^$l$k%G!<%?=89g$N index CM$O!"5?;wNs **column(-2)** $GMxMQ$G$-$^$9!#$3$l$O!"0J2<$K8+$k$h$&$K!"$=$N%U%!%$%kFb$N8D!9$N%G!<%?=89g$r6hJL$9$kJL$NJ}K!$rDs6!$7$^$9!#$3$l$O!"IA2hMQ$K1 $D$N%G!<%?=89g$NA*Br$7$+$7$J$$>l9g$O**index** %3%^%s%I$h$j$bIT3f9%$G$9$,!"8D!9$N%G!<%?=89g$K0[$J$kB0@-$r3d$jEv$F$?$$>l9g$K$O$H$F$bJXMx$G$9!#0J2<;2>H **pseudocolumns (p. 100)**, **lc variable (p. 42)**!#

Nc:

```
plot 'file' using 1:(column(-2)==4 ? $2 : NaN)        # $H$F$bIT3f9%
plot 'file' using 1:2:(column(-2)) linecolor variable # $H$F$bJXMx!
```

**index '<name>'** $O!"%G!<%?=89g$rL>A0 '<name>' $GA*Br$7$^$9!#L>A0$O%3%a%s%H9T$K=q$$$F%G!<%?=89g$K3d$jEv$F$^$9!#%3%a%s%HJ8;z$H$=$l$KB3$/6uGr$r$=$N%3%a%s%H9T$+$i<h$j=|$$$F!"$=$N7k2L$, <name> $+$i;O$^$C$F$$$l$P!"$=$l$KB3$/%G!<%?=89g$K<name> $H$$$&L>A0$,$D$1$i$l$F!"$=$l$r;XDj$G$-$^$9!#

Nc:

```
plot 'file' index 'Population'
```

<name> $G;O$^$k$9$Y$F$N%3%a%s%H$,$=$l$KB3$/%G!<%?=89g$NL>A0$K$J$k$3$H$KCm0U$7$F$/$@$5$$!#LdBj$rHr$1$k$?$a$K!"Nc$($P '== Popolation ==' $d '[Population]' $J$I$NL?L>K!$rA*Br$9$k$HJXMx$G$7$g$&!#

### Skip

%-!<%o!<%I **skip** $O!"%W%m%0%i%`$K%F%-%9%H%G!<%?%U%!%$%k (%P%$%J%j%G!<%?$OIT2D) $N@hF,$N?t9T$r%9%-%C%W$5$;$^$9!#%9%-%C%W$9$k9T$O!"**every** %-!<%o!<%I=hM}$G$N9T?t$K$O%+%&%s%H$7$^$;$s!#**every ::N** $O$=$N%U%!%$%kFb$N%G!<%?$N%9%Y%F$N%V%m%C%/$N@hF,$r%9%-%C%W$7$^$9$,!"**skip N** $O$=$N%U%!%$%k$N@hF,,ItJ,$N9T$N$_$r%9%-%C%W$9$k$3$H$KCm0U$7$F$/$@$5$$!#%P%$%J%j%G!<%?%U%!%$%k$KE,MQ$5$l$kF1MM$N%*%W%7%g%s$K$D$$$F$O!"0J2<;2>H **binary skip (p. 88)**!#

### Smooth

**gnuplot** $O!"%G!<%?$NJd4V$H6a;w$r9T$&HFMQE*$J%k!<%A%s$r$$$/$D$+;}$C$F$$$^$9!#$3$l **smooth** %*%W%7%g%s$NCf$K%0%k!<%W2=$5$l$F$$$^$9!#$h$j@vN}$5$l$?%G!<%?=hM}$r$7$?$1$l$P!"3 0It$K$*$$$F%G!<%?$NA0=hM}$r$9$k$+!"$^$?$OE,@Z$J%b%G%k$G fit $r;H$&$N$,$$$$$G$7$g$&!#

=q<0:

```
smooth {unique | frequency | fnormal | cumulative | cnormal | bins
              | kdensity {bandwidth}
              | csplines | acsplines | mcsplines | bezier | sbezier
              | unwrap}
```

**unique**, **frequency**, **fnormal**, **cumulatie**, **cnormal** $O!"x :BI8$K4X$7$F%G!<%?$r%=!<%H$7!"$=$7$F$=$N x $NCM$KBP$9$kJ,I[$N$"$k<o$NMM;R$rIA2h$7$^$9!#

spline 7O!"Bezeir 7O$N%*%W%7%g%s$O!"%G!<%?$NC<$HC<$r7k$VO"B36J@~$N78?t$r7hDj$7$^$9!#$3$N6J@~$O4X?t%0%i%U$HF1$8J}K!!"$9$J$o$A$=$NCM$rx :BI8$K1h$&F1$8I}$N6h4V$4$H$KA*$S (0J2<; 2>H: **set samples (p. 168)**)!"$=$l$i$NE@$r@~J,$G$D$J$0$3$H$GIA2h$7$^$9!#%G!<%?=89g$,6u9T$dL$Dj5ACM$G@Z$i$l$F$$$k>l9g!"@Z$i$l$F$$$J$$=$l$>$l$NItJ,$rJL!9$NO"B36J@~$H$7$F$D$J$.$^$9!#$3$l$i$NJL!9$K$D$J$$@ItJ,F1;N$O!"6J@~$H$7$F@Z$l$?$j!"ITO"B3$K$J$C$?$j$9$k$+$b$7$l$^$;$s!#

**unwrap** $O!"%G!<%?$,&P$h$jBg$-$J%8%c%s%W$r$7$J$$$h$&$K!"2 &P$N@0?tG\$r2C$($kA`:n$r$7$^$9!#

$b$7 **autoscale** $N>uBV$G$"$l$P!"<4$NHO0O$O8 5$N%G!<%?$+$i$G$O$J$/!"$=$3$+$i:n$i$l$k:G=*E*$J6J@~$KBP$7$F7W;;$5$l$^$9!#

$b$7 **autoscale** $N>uBV$G$J$/!"$+$D%9%W%i%$%s6J@~$r@8@.$9$k>l9g!"$=$N%9%W%i%$%s6J@~$NI8K\2=$O!"F~NO%G!<%?$r4^$`$h$&$Jx $NHO0O$H!"**set xrange** $GDj5A$5$l$k8GDj$7$?2#:BI8$NHO0O$N6&DLItJ,$N>e$G9T$J$o$l$^$9!#

MW5a$9$kJ?3j2=%*%W%7%g%s$rE,MQ$9$k$K$O%G!<%?$NE@?t$,>/$J$9$.$k>l9g$O!"%(%i!<%a%C%;!<%8$,I=<($5$l$^$9!#

**smooth** %*%W%7%g%s$O!"4X?t$NIA2h$N$H$-$K$OL5;k$5$l$^$9!#

### Acsplines

**acsplines** %*%W%7%g%s$O!V<+A3$J3j$i$+$J%9%W%i%$%s!W$G%G!<%?$r6a;w$7$^$9!#%G!<%?$,x $K4X$7$FC1D4$K$5$l$?8e (0J2<; 2>H: **smooth unique (p. 96)**)!"1 $D$N6J@~$,!"$$$/$D$+$N3<!B?9`<0$N0lItJ,$K$h$j6hJ,E*$K9=@.$5$l$^$9!#$=$l$i$N3<!<0$N78?t$O!"8D!9$N%G!<%?E@$K9g$&$h$&$K5a$a$i$l$^$9$,!"using ;XDj$K$h$C$F3 NsL\$NCM$,M?$($i$l$?>l9g$O!"$=$NCM$G8D!9$NE@$K=E$_$r$D$1$^$9!#%G%U%)%k%H$O!"0J2<$HF1$8$G$9:

```
plot 'data-file' using 1:2:(1.0) smooth acsplines
```

@-<A>e!"=E$_$N@dBPE*$JBg$-$5$O!"6J@~$r9=@.$9$k$N$K;H$o$l$k6hJ,$N?t$r7hDj$7$^$9!#$b$7=E$_$,Bg$-$1$l$P!"8D!9$N%G!<%?$N1F6A$OBg$-$/$J$j!"$=$7$F$=$N6J@~$O!"NY$j9g$&E@F1;V$r<+A33 <!%9%W%i%$%s$G$D$J$$$GF@$i$l$k$b$N$K6a$E$-$^$9!#$b$7=E$_$,>.$5$1$l$P!"$=$N6J@~$O$h$j>/$J$$6hJ,$G9=@.$5$l!"$=$l$K$h$C$F$h$jJ?3jE*$K$J$j$^$9!#$=$N:G$b6KC<$J>l9g$O$?$@1 $D$N6hJ,$+$i$J$k>l9g$G$"$j!"$=$l$OA4$F$N%G!<%?$K=E$_$NIU$-@~7A:G>.2 >h6a;w$K$h$C$F:n$i$l$^$9!#8m:9$NN)>l$+$i8@$($P!"U?3j$5$N=E$_$O!"$=$N6J@~$KBP$9$k!VJ?3j2=0x;R!W$K$h$C$FJ,3d$5$l$?3FE@$X$N!"E}7WE*$J=E$_$H8+$k$3$H$,$G$-$^$9!#$=$l$K$h$j!"$=$N%U%!%$%kCf$N(I8=`E*$J) 8m:9$OJ?3j$5$N=E$_$H$7$F;H$&$3$H$,$G$-$^$9!#

Nc:

```
sw(x,S)=1/(x*x*S)
plot 'data_file' using 1:2:(sw($3,100)) smooth acsplines
```

### Bezier

**bezier** %*%W%7%g%s$O!"n <!(%G!<%?E@$N8D?t) $N%Y%8%'6J@~$G%G!<%?$r6a;w$7$^$9!#$3$N6J@~$ON>C<$NE@$r$D$J$.$^$9!#

### Bins

**smooth bins** $O **bins** $HF1$8$G$9!#0J2<; 2>H: **bins (p. 92)**!#4XO"$9$kIA2h%9%?%$%k$K4X$7$F$O!"0J2<; 2>H: **smooth frequency (p. 96)**,**smooth kdensity (p. 96)**!#

**Csplines** **csplines** %*%W%7%g%s$O%G!<%?$rC1D4$KB7$($?8e$G(0J2<;2>H:**smooth unique (p. 96)**) <+A33 <!%9%W%i%$%s6J@~$G0z$-B3$/E@$r$D$J$.$^$9!#

**Mcsplines** **mcsplines** %*%W%7%g%s$O!"U?3j2=$5$1$?4X?t$,85$NE@$NC1D4@-$HFI@-$rJ]B8$9$k$h$&$J3<!%9%W%i%$%s6J@~$G0z$-B3$/E@$r$D$J$.$^$9!#$3$1$O!"3O$1CM$N1F6A$rDc8:$7$^$9!#FN Fritsch & RE Carlson (1980) "Monotone Piecewise Cubic Interpolation", SIAM Journal on Numerical Analysis 17: 238-246.

**Sbezier** **sbezier** %*%W%7%g%s$O!":G=i$K%G!<%?$rC1D4$KB7$((0J2<;2>H: **unique (p. 96)**) $=$7$F **bezier** %"%k%4%j%:%`$rE,MQ$7$^$9!#

**Unique** **unique** %*%W%7%g%s$O!"%G!<%?$r x J}8~$KC1D4$K$7$^$9!#F1$8 x $r;}$D%G!<%?E@$O y $NCM$rJ?6Q$7$F01$D$NE@$GCV$-49$($^$9!#$=$7$F$=$N7k2L$H$7$FF@$i$1$kE@$r@~J,$G7k$S$^$9!#

**Unwrap** **unwrap** %*%W%7%g%s$O!"2$D$NB3$/E@$,&P$r1[$($k0c$$$,=P$J$$$h$&$K%G!<%?$r=$@5$7$^$9: y $NCM$,$=$NHC0O$r1[$($k$h$&$JE@$KBP$7$F$O!"A0$NE@$H$N:9$,&P$NHC0O$K<}$^$k$h$&$K2&P$N@0?tG\$r2C$($^$9!#$3$NA`:n$O!"4,$-La$7$r;}$D7O$NCM$r;~4VE*$KO"B3$K$5$;$k$N$KM-MQ$G$9!#

**Frequency** %*%W%7%g%s **frequency** $O!"%G!<%?$r x $K4X$7$FC1D4$K$7$^$9!#x :BI8$,F1$8E@$O!"$=$1$i$Ny $NCM$N9g7W$r y $NCM$H$7$F;}$D01$D$NE@$KCV$-49$($^$9!#B?$/$NCM$N%G!<%?$N%R%9%H%0%i%`$r01D j$N3,5iI} (bin) $GIA$/$K$O!"$=$1$i$Ny $NCM$r 1.0 $K$7$F!"$=$1$G$=$NDB$,F1$83,5iI}Fb$NE@$N8D?t$rI=$9$h$&$K$7$^$9!#$3$1$O!"%G!<%?1Ns$@$1$r;XDj$7$?>19g$O!"0EL[$N$&$A$K9T$J$o$1$^$9!#Nc:

```
binwidth = <E,Ev$JCM>   # x $NCM$N3F3,5iI}
bin(val) = binwidth * floor(val/binwidth)
plot "datafile" using (bin(column(1))):(1.0) smooth frequency
plot "datafile" using (bin(column(1))) smooth frequency  # F1>e
```

0J2<$b;2>H!#smooth.dem

**Fnormal** %*%W%7%g%s **fnormal** $O!"%*%W%7%g%s **frequency** $HF1MM$NF0:n$r$7$^$9$,!"@55,2=$7$?%R%9%H%0%i%`$r@8@.$7$^$9!#$9$J$o$A!"%G!<%?$r x $K4X$7$FC1D4$K$7$F!"y $NCM$O$=$N$9$Y$F$NDB$,1$K$J$k$h$&$K@55,2=$7$^$9!#x :BI8$,F1$8E@$O!"$=$1$i$Ny $NCM$N9g7W$r y $NCM$H$7$F;}$D01$D$NE@$KCV$-49$($^$9!#B?$/$NCM$N%G!<%?$N%R%9%H%0%i%`$r01D j$N3,5iI} (bin) $GIA$/$K$O!"$=$1$i$Ny $NCM$r 1.0 $K$7$F!"$=$1$G$=$NDB$,F1$83,5iI}Fb$NE@$N8D?t$rI=$9$h$&$K$7$^$9!#$3$1$O!"%G!<%?1Ns$@$1$r;XDj$7$?>19g$O!"0EL[$N$&$A$K9T$J$o$1$^$9!#0J2<$b;2>H!#smooth.dem

**Cumulative** %*%W%7%g%s **cumulative** $O!"%G!<%?$r x $K4X$7$FC1D4$K$7$^$9!#x :BI8$,F1$8E@$O!"$=$10J2<$Nx $NCM$r;}$D$9$Y$F$NE@($9$J$o$A8=:_$N%G!<%?E@$N:8B&$NE@) $KBP$9$k y $NCM$N_@QE*$J9g7W$r y $NCM$H$7$F;}$D01$D$NE@$KCV$-49$($i$1$^$9!#$3$1$O!"%G!<%?$+$iN_@QJ,I[4X?t$rF@$k$N$KMxMQ$G$-$^$9!#0J2<$b;2>H!#smooth.dem

**Cnormal** %*%W%7%g%s **cnormal** $O!"x $K4X$7$FC1D4$G!"y $NCM$O [0:1] $K@55,2=$5$1$?%G!<%?$r@8@.$7$^$9!#F1$8 x $NCM$r;}$D$DE@$,J#?t$"$k>19g$O!"$=$1$h$j>.$5$$ x $NCM$r;}$D$9$Y$F$N%G!<%?E@($9$J$o$A8=:_$N%G!<%?E@$h$j$b:8B&$K$"$kE@) $NN_@QDB$r!"$9$Y$F$N y $NCM$NDB$G3d$C$?CM$r y $NCM$H$7$F;}$D$h$&$J01E@$N%G!<%?$KCV$-JQ$($i$1$^$9!#$3$1$O!"%G!<%?$+$i@55,2=$5$1$?N_@QJ,I[4X?t$rF@$k$N$K;H$($^$9(FC$KI8K\E@?t$N0[$J$k%G!<%?=89g$rHf3S$9$k$N$KM-MQ$G$9)!#0J2<$b;2>H!#smooth.dem

**Kdensity** %*%W%7%g%s **kdensity** $O!"%,%&%93K$rMQ$$$?!"%i%s%@%`A*BrE@$N3KL)EYI>2A($=$1$O3j$i$+$J%R%9%H%0%i%`$K$J$j$^$9) $rIA2h$9$kJ}K!$N01$D$G$9!#%,%&%93K$,Bh1Ns$N3FE@$N0LCV$KCV$+$1!"$3$1$i$N%,%&%93K$9$Y$F$NDB$,4X?t$H$7$FIA2h$5$1$^$9!#2NsL\$NCM$O!"%,%&%93K$N=E$_$H$7$F;HMQ$5$1$^$9!#@55,2=$5$1$?%R%9%H%0%i%`$rF@$k$K$O!"$3$1$r1/(E@$N8D?t) $H$9$Y$-$G$9!#%G%U%)%k%H$G$O!"gnuplot $O@55,J,I[$N%G!<%?$KBP$7$F:GE,$H$J$k$h$&$J%P%s%II}$r7W;;$7$F;HMQ$7$^$9!#

```
default_bandwidth = sigma * (4/3N) ** (0.2)
```

$3$1$ODL>o$O$H$F$bJ]<iE*$G!"$9$J$o$AI}9-$$%P%s%II}$G$9!#%P%s%II}$O!"L@<(E*$K;XDj$9$k$3$H$b$G$-$^$9!#

```
plot $DATA smooth kdensity bandwidth <value> with boxes
```

A0$NIA2h$G;HMQ$5$1$?%P%s%II}$O!"JQ?t GPVAL_KDENSITY_BANDWIDTH $KJ]B8$5$1$^$9!#

## FCJL$J%U%!%$%kL> (special-filenames)

FCJL$J0UL#$r;}$D%U%!%$%kL>$H$7$F!"<!$N$b$N$,$"$j$^$9: '', '-', '+', '++'

6u$N%U%!%$%kL> '' $O!"F1$8 plot %3%^%s%I>e$G!"D>A0$NF~NO%U%!%$%k$r:F$S;HMQ$9$k$3$H$r gnuplot $K;X<($7$^$9!#$h$C$F!"F1$8F~NO%U%!%$%k$N2 $D$N%G!<%?Ns$rIA2h$9$k$K$O0J2<$N$h$&$K$7$^$9:

```
plot 'filename' using 1:2, '' using 1:3
```

$3$N filename $O!"$3$N8e$N plot %3%^%s%I$G$b '' $G:FMxMQ$G$-$^$9$,!"$=$N>l9g$K save $9$k$H!"%3%a%s%H$H$7$F$=$NL>A0$r5-O?$9$k$N$_$G$9!#

'+' $H '++' $H$$$&FCJL$J%U%!%$%kL>$O!"using ;XDj$NA4BN$HIA2h%9%?%$%k$K%$%s%i%$%s4X?t$r;H$($k$h$&$K$9$k$?$a$N;EAH$_$G$9!#DL>o!"4X?tIA2h$O%5%s%W%kE@Kh$KC10l$Ny ($^$?$Oz) $NCM$7$+;}$F$^$;$s!#$7$+$75?;w%U%!%$%k'+' $O$=$1$,$"$?$+$b<B:]$NF~NO%U%!%$%k$G$"$k$h$&$K!"using ;XDj$K$h$k1 NsL\$NCM$rI8K\E@$H$7$F07$$!"$5$i$KD|2C$NNs$NCM$r;XDj$9$k$3$H$b2DG=$G$9!#I8K\E@$O!"%G%U%)%k%H$G$O set xrange $G@_Dj$7$?HO0OA4BN$KEO$j!"set samples $G@)8f$9$kI8K\2=$K=>$C$F<h$i$1$^$9!#

```
plot '+' using ($1):(sin($1)):(sin($1)**2) with filledcurves
```

'+' $ND>A0$K!"FHN)$JI8K\HO0O$r;XDj$9$k$3$H$b$G$-$^$9!#DL>o$N4X?tIA2h$N$HF1MM!"FHN)JQ?t$KL>A0$r3d$jEv$F$k$3$H$b$G$-$^$9!#plot $N:G=i$NMWAG$KM?$($k>l9g!"I8K\HO0O$K$O$=$1$rL@<($9$k%-!<%o!<%I sample $rA0CV$9$kI,MW$,$"$j$^$9 (0J2<$b;2>H: **plot sampling (p. 103)**)!#

```
plot sample [beta=0:2*pi] '+' using (sin(beta)):(cos(beta)) with lines
```

$5$i$K!"+ $NHO0O;XDj$K$O!"I8K\A}J,$rM?$($k$3$H$b$G$-$^$9!#

```
plot $MYDATA, [t=-3:25:1] '+' using (t):(f(t))
```

5?;w%U%!%$%k '++' $O!"u J}8~$O set samples $G@)8f$5$1$kE@$N?t!"v J}8~$O set isosamples $G@)8f$5$1$kE@$N?t$N!"I8=`E*$J [u,v] :BI8$N3J;R$r@8@.$9$k2 Ns$N%G!<%?$rJV$7$^$9!#$h$C$F!"'++' $NIA2h$NA0$K!"urange $H vrange $r@_Dj$9$kI,MW$,$"$j$^$9$,!"x $H y $NHO0O$O<+F0E*$K@_Dj$5$1$k$+!"$"$^$?$OL@<(E*$K urange, vrange $H$O0c$&CM$K@_Dj$G$-$^$9!#'++' $N%5%s%W%j%s%0$G$Nu, v $N;HMQ$O!"version 5.0 $+$i$NJQ99$G$9!#Nc:

```
splot '++' using 1:2:(sin($1)*sin($2)) with pm3d
plot '++' using 1:2:(sin($1)*sin($2)) with image
```

**'-'** $H$$$&FCJL$J%U%!%$%kL>$O!"%G!<%?$,%$%s%i%$%s$G$"$k$3$H$r;X<($7$^$9!#$9$J$o$A!"%G!<%?$r%3%^%s%I$N8e$KB3$1$F;XDj$7$^$9!#$3$N$H$-$O%G!<%?$N$_$,%3%^%s%I$KB3$-F@$^$9!#$h$C$F!"plot %3%^%s%I$KBP$9$k%U%#%k%?!<!"%?%$%H%k!"%i%s%9%?%$%k$H$$$C$?%*%W%7%g%s$O!"plot $N%3%^%s%I%i%$%s$NJ}$K=q$+$J$$$H$$$1$^$;$s!#$3$1$O!"unix %7%'%k%9%/%j%W%H$K$*$1$k << (%R%"%I%-%e%a%s%H)!"$"$k$$$O VMS DCL $K$*$1$k $DECK $HF1MM$G$9!#$=$N%G!<%?$O!"$=$1$i$,%U%!%$%k$+$iFI$_9~$^$1$?$+$N$h$&$K!"1 9T$K$D$-1 $D$:$D$N%G!<%?E@$,F~NO$5$1$^$9!#$=$7$F%G!<%?$N=*$j$O!"1 NsL\$N;O$a$KJ8;z "e" $rCV$/$3$H$G;X<($7$^$9!#

**'-'** $O!"%G!<%?H%3%^%s%I$r0l=o$K;}$D$3$H$,M-MQ$G$"$k>l9g$N$?$a$K$"$j$^$9!#Nc$($P!"JL!9$N%"%W%j1!<%7%g%s$+$i gnuplot $K$=$NN>J}$,%Q%$%WF~NO$5$1$k>l9g$G$9!#Nc$($P!"%G%b%U%!%$%k$NCf$K$O$3$N5 !G=$r;H$&$b$N$,$"$k$G$7$g$&!#index $d every $N$h$&$J plot $N%*%W%7%g%s$,M?$($i$1$F$$$k$H!"$=$1$i$O;H$o$1$k$3$H$N$J$$$G!<%?$NF~NO$rMW5a$7$F$-$^$9!#$4$/C1=c$J>l9g$r=|$/$9$Y$F$N>l9g$G!"'-' $+$i$G!<%?$rFI$_9~$`$h$j$b!"$G=i$K%G!<%?$V%m%C%/$rDj5A$7$F$=$1$rFI$_9~$`J}$,B?J,4JC1$G$9!#0J2<$;2>H: **datablocks (p. 39)**!#

$b$7!"replot %3%^%s%I$G **'-'** $r;H$&$J$i!"$"$J$?$O1 EY0J>e%G!<%?$rF~NO$9$kI,MW$,$"$k$G$7$g$&!#0J2<$;2>H: **replot (p. 110)**, **refresh (p. 109)**!#7+$jJV$7$^$9$,!"%G!<%?V%m%C%/$r;H$&J}$,$$$$$G$9!#

6u$N%U%!%$%kL> ('') $O!"D>A0$N%U%!%$%kL>$,:F$S;H$o$1$k$3$H$r;X<($7$^$9!#$3$1$O!"

```
plot '$"$k/$H$F$b/D9$$/%U%!%$%kL>' using 1:2, '' using 1:3, '' using 1:4
```

$N$h$&$J$H$-$KJXMx$G$9!#($b$7F1$8 plot %3%^%s%I>e$G!"'-' $H '' $NN>J}$r;HMQ$9$k$H!">e$NNc$K$"$k$h$&$K!"%$%s%i%$%s%G!<%?$N2 $D$N=89g$rM?$($kI,MW$,$"$j$^$9!#)

### %Q%$%W$K$h$kF~NO%G!<%? (piped-data)

popen 4X?t$r; }$C$F$$$k%7%9%F%`>e$G$O!"%G!<%?%U%!%$%k$O!"'<' $G;O$^$k%U%!%$%kL>$K$h$C$F!"%7%'%k%3%^%s%I$+$i%Q%$%WF~NO$9$k$3$H$,$G$-$^$9!#Nc$($P

```
pop(x) = 103*exp(-x/10)
plot "< awk '{print $1-1965, $2}' population.dat", pop(x)
```

$O!":G=i$N?M8}$NNc$HF1$8>pJs$rIA2h$7$^$9!#$?$@$7!"x :BI8$O 1965 G/$+$i$N7P2aG/$rI=$9$h$&$K$J$j$^$9!#$3$NNc$r<B9T$9$k$H$-$O!">e$N%G!<%?%U%!%$%k$N%3%a%s%H9T$r$9$Y$F:o=|$7$J$1$1$P$J$j$^$;$s$,!"$^$?$O>e$N%3%^%s%I$N:G=i$NItJ,$r<!$N$h$&$KJQ$($k$3$H$b$G$-$^$9 (%3%s%^$KB3$/ItJ,):

```
plot "< awk '$0 !~ /^#/ {print $1-1965, $2}' population.dat"
```

$3$N%"%W%m!<%A$O:G$b=@Fp@-$,$"$j$^$9$,!"using %-!<%o!<%I$rMQ$$$?C1=c$J%U%#%k%?%j%s%0$G9T$&$3$H$b2D G=$G$9!#

fdopen() 4X?t$r; }$D%7%9%F%`$G$O!"%G!<%?$r!"%U%!%$%k$+%Q%$%WK7k$S$D$1$i$1$?G$0U$N%U%!%$%k%G%9%/%j%W%?$+$iF I$_9~$`$3$H$,$G$-$^$9!#n HV$N%U%!%$%k%G%9%/%j%W%?$+$iF I$_9~$`$K$O!"'<&n' $H$7$F$/$@$5$$!#$3$1$K$h$j!"1 2s$N POSIX shell $+$i$N8F$S=P$7$NCf$G!"U#?t$N%G!<%?%U%!%$%k$+$i$N%Q%$%WF~NO$,MF0W$K9T$($k$h$&$K$J$j$^$9:

```
$ gnuplot -p -e "plot '<&3', '<&4'" 3<data-3 4<data-4
$ ./gnuplot 5< <(myprogram -with -options)
gnuplot> plot '<&5'
```

### Thru

%-!<%o!<%I thru $OHs?d>)$G$9!#

8E$$=q<0:

```
plot 'file' thru f(x)
```

8=:_$N=q<0:

```
plot 'file' using 1:(f($2))
```

### Using

:G$b$h$/;H$o$1$k%G!<%?%U%!%$%k$N=$>~;R$O using $G!"$3$1$OF~NO%U%!%$%k$N$I$N9T$rIA2h$9$k$N$+$r;X<($7$^$9!#

=q<0:

```
plot 'file' using <entry> {:<entry> {:<entry> ...}} {'format'}
```

format $r;XDj$9$k$H!"$=$1$r C %i%$%V%i%j4X?t 'scanf' $KE,MQ$7$F%G!<%?%U%!%$%k$N3F9T$rFI$_$^$9!#$=$&$G$J$1$1$P!"3F9T$O%[%o%$%H%9%Z!<%9 (%9%Z!<%9$d%?%V) $G6h@Z$i$1$?%G!<%?$NNs (%U%#!<%k%I) $+$i$J$k$H$_$J$7$^$9$,0J2<$b;2>H: **datafile separator (p. 124)**!#

3F <entry> $O!"F~NO%U%!%$%k$N0l$D$N%U%#!<%k%I$rA*Br$9$k$?$a$NC1$J$kNs$NHV9f$+!"0l$D$N%G!<%?=89g$N:G=i$N9T$NNs$N%i%Y%k$K0lCW$9$kJ8;zNs!"%+%C%3$G0O$^$1$?t<0!"xticlabels(2) $N$h$&$K%+%C%3$G0O$^$J$$FCJL$J4X?t!"$N$$:$1$+$G$9!#

$=$N%(%s%H%j$,%+%C%3$G0O$^$1$?t<0$N>l9g!"N NsL\$NCM$r;XDj$9$k$N$K4X?t column(N) $r;HMQ$G$-$^$9!#$D$^$j!"column(1) $OF I$_9~$^$1$?:G=i$N9`L\$r;2>H$7!"column(2) $O<!$N9`L\!"$H$$$C$?6q9g$G$9!#column(1), column(2), ... $NN,5-$H$7$F!"FCJL$J5-9f $1, $2, ... $r;HMQ$G$-$^$9!#4X?t valid(N) $G!"N HVL\$NNs$,M-8z$J?t;z$G$"$k$+$I$&$+%F%9%H$G$-$^$9!#F~NO%U%!%$%k$N:G=i$N9T$N3FNs$K!"%G!<%?$NCM$G$O$J$/%i%Y%k$r; }$C$F$$$k>l9g!"$3$N%i%Y%k$rF~NONs$NFCDj$dplot %?%$%H%k$K;HMQ$G$-$^$9!#4X?t column() $O!"NsHV9f0J30$K%i%Y%k$GF~NONs$rA*Br$G$-$^$9!#Nc$($P!"%G!<%?%U%!%$%k$,0J2<$N$h$&$J>l9g:

```
Height    Weight    Age
val1      val1      val1
...       ...       ...
```

0J2<$N plot %3%^%s%I$CF1$80UL#$K$J$j$^$9:

```
plot 'datafile' using 3:1, '' using 3:2
plot 'datafile' using (column("Age")):(column(1)), \
              '' using (column("Age")):(column(2))
plot 'datafile' using "Age":"Height", '' using "Age":"Weight"
```

;XDjJ8;zNs$,40A4$K01CW$9$kI,MW$,$"$j$^$9$7!"BgJ8;z>.J8;z$b6hJL$7$^$9!#Ns$N%i%Y%k$r plot %?%$%H%k$K;H$&$K$O!"**set key autotitle columnhead** $H$7$F$/$@$5$$!#

F~NO%G!<%?%U%!%$%k$N 1...N $H$$$&<B:]$NNs$K2C$($F!"gnuplot $O4IM}>pJs$r;}$D$$$/$D$+$N"5?;wNs" $rDs6!$7$^$9!#Nc$($P!"$0 $^$?$O column(0) $O!"%G!<%?=89gFb$N$=$N%G!<%?9T$N9THV9f$rJV$7$^$9!#0J2<;2>H: **pseudocolumns (p. 100)**!#

<entry> $K2?$b=q$+$J$1$1$P!"$=$N% (%s%H% j$N% j% 9%H$N=g$K%G%U%)%k%H$NCM$,;H$o$1$^$9!#Nc$($P **using ::4** $O!"**using 1:2:4** $H2r<a$5$1$^$9!#

**using** $K$?$@01$D$N% (%s%H% j$r;XDj$7$?>19g$O!"$=$N <entry> $O y $NCM$H$7$F;H$o$1!"%G!<%?E@$NHV9f (5?;wNs $0) $, x $H$7$F;H$o$1$^$9!#Nc$($P"**plot 'file' using 1**" $O "**plot 'file' using 0:1**" $HF1$80UL#$G$9!#**using** $K 2 $D$N% (%s%H% j$rM?$($?>19g!"$=$1$i$O x, y $H$7$F;H$o$1$^$9!#$5$i$K% (%s%H% j$rDI2C$7$F!"F~NO$+$i$N%G!<%?$rMxMQ$9$k$h$&$JIA2h%9%?%$%k$N>\:Y$K$D$$$F$O!"0J2<;2>H: **set style (p. 170)**, **fit (p. 75)**!#

'scanf' 4X?t$G$O?'!9$J%G!<%?7A<0$N?tCMF~NO$,;H$($^$9$,!"**gnuplot** $OA4$F$NF~NO%G!<%?$rG\@:EYIbF0>.?t$H$_$J$7$^$9$+$i!"**gnuplot** $G$O **%lf** $,K\<AE*$KM#01$N?tCMF~NO;XDj!"$H$$$&$3$H$K$J$j$^$9!#=q<0J8;zNs$K$O!"> /$J$/$H$b01$D!"$=$7$F 7 $D0J2<$N!"$=$N$h$&$JF~NO;XDj;R$rF~$1$kI,MW$,$"$j$^$9!#'scanf' $O?t$H?t$N4V$K% [%o%$%H%9%Z!<%9!"$9$J$o$A6uGr!"%?%V ("\t")!"2~9T ("\n")!"$^$?$O2~%Z!<%8 ("\f") $,$"$k$H4|BT$7$^$9!#$=$10J30$NF~NO$OL@<(E*$K%9%-%C%W$5$1$k$Y$-$G$9!#

"\t", "\n", "\f" $r;H$&$H$-$OC1010zMQId$h$j$'$7$mFs=E0zMQId$r;H$&$Y$-$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

**Using $NNc (using_examples)** <!$NNc$O!"1 HVL\$N%G!<%?$KBP$9$k 2 HVL\$H 3 HVL\$NOB$NCM$r plot $7$^$9!#=q<0J8;zNs$O!"3FNs%G!<%?$,%9%Z!<%96h@Z$j$G$J$/!"%3%s%^6h@Z$j$G$"$k$3$H$r;X<($7$F$$$^$9$,!"F1$8$3$H$, **set datafile separator comma** $r;XDj$9$k$3$H$G$b2DG=$G$9!#

```
plot 'file' using 1:($2+$3) '%lf,%lf,%lf'
```

<!$NNc$O!"$h$jJ#;($J=q<0;XDj$G%G!<%?$r%U%!%$%k "MyData" $+$iFI$_9~$_$^$9!#

```
plot 'MyData' using "%*lf%lf%*20[^\n]%lf"
```

$3$N=q<0;XDj$N0UL#$O0J2<$NDL$j$G$9:

| | |
|---|---|
| `%*lf` | ?tCM$rL5;k |
| `%lf` | G\@:EYIbF0>.?t$rFI$_9~$`(%G%U%)%k%H$G$O x $NCM) |
| `%*20[^\n]` | 20 8D$N2~9T0J30$NJ8;z$rL5;k |
| `%lf` | G\@:EYIbF0>.?t$rFI$_9~$`(%G%U%)%k%H$G$O y $NCM) |

3 9`1i;;R ?: $r;H$C$F%G!<%?$r%U%#%k%?$9$k01$D$N7]Ev$r>R2p$7$^$9!#

```
plot 'file' using 1:($3>10 ? $2 : 1/0)
```

$3$1$O!"1 NsL\$N%G!<%?$KBP$7$F!"3 NsL\$N%G!<%?$, 10 0J>e$G$"$k$h$&$J2 NsL\$N%G!<%?$r plot $7$^$9!#**1/0** $OL$Dj5ACM$G$"$j!"**gnuplot** $OL$Dj5A$NE@$rL5;k$9$k$N$G!"$h$C$FE,@Z$G$J$$E@$O1#$5$1$k$3$H$K$J$j$^$9!#$^$?$O!"$"$i$+$8$aDj5A$5$1$F$$$kCM NaN $r;H$C$F$bF1$8$3$H$K$J$j$^$9!#

%+%C%3$G;O$^$C$F$$$J$$8B$j$ODj?t<0$rNsHV9f$H$7$F;H$&$3$H$,$G$-$^$9!#Nc$($P **using 0+(J#;($J<0)** $NMM$J$3$H$,$G$-$^$9!#$=$7$F!"$=$N?t<0$O!"%+%C%3$G%9?!<%H$7$F$$$J$1$1$P?t<0$NCM$,01EYI>2A$5$1!"%+%C%3$G%9?!<%H$7$F$$$1$P8D!9$N%G!<%?E@$rFI$_9~$`$?$a$K$=$NCM$,01EYI>2A$5$1$k!"$H$$$&E@$,=EMW$G$9!#

;~7ONs%U%)!<%^%C%H%G!<%?$r;H$C$F$$$k>19g!"$=$N;~4V$N%G!<%?$OJ#?t$NNs$KEO$i$;$k$3$H$,$G$-$^$9!#$=$N>19g!"B>$N%G!<%?$N3+;OOLCV$r7W;;$9$k$H$-!";~4V$N%G!<%?$K6uGr$,4^$^$1$F$$$k$3$H$KCm0U$7$F$/$@$5$$!#Nc$($P!"%G!<%?9T$N:G=i$NMWAG$,%9%Z!<%9$,Kd$a9~$^$1$?;~4V$G!<%?$G$"$k$J$i$P!"y $NCM$O3 NsL\$NCM$H$7$F;XDj$5$1$k$Y$-$G$9!#

(a) **plot 'file'** $H!"(b) **plot 'file' using 1:2**!"$=$7$F (c) **plot 'file' using ($1):($2)** $K$OHyL/$J0c$$$,$"$k$3$H$KCm0U$7$F$/$@$5$$!#:Y$+$$$5sF0$O!"%P!<8%g%s 5 $GJQ99$5$1$F$$$^$9!#0J2<;2>H: **missing (p. 123)**!#

:G=i$KC1$K

```
plot 'file' using 1:2
```

$H;XDj$9$k$3$H$G!"BgDq$N>l9g$I$s$J$K%4%_$N%G!<%?$r4^$`9T$r;}$D%U%!%$%k$r$bplot $9$k$3$H$,2DG=$K$J$j$^$9!#$7$+$7!"$I$&$7$F$b%G!<%?%U%!%$%k$KJ8;zNs$r;D$7$F$*$-$?$$$J$i$P!"$=$N%F%-%9%H9T$NBh0lNs$K%3%a%s%HJ8;z(#) $rCV$/J}$,$h$j0BA4$G$7$g$&!#

**5?;wNs (pseudocolumns)** plot J8$N **using** 9`L\Fb$N<0$G$O!"F~NO%U%!%$%k$K4^$^$l$k<B:]$N%G!<%?CM$K2C$($F4IM}>pJs$b;2>H$G$-!"$3$l$i$O"5?;wNs" (pseudocolumns) $K4^$^$l$F$$$^$9!#

| | |
|---|---|
| `column(0)` | %G!<%?=89gFb$G$N3FE@$N=gHV!#=gHV$O 0 $+$i;O$^$j!"2 9T$N%V%i%s%/9T$G%j%;%C%H$5$l$^$9!#N,5- $0 $b;HMQ2D!# |
| `column(-1)` | $3$NHV9f$O 0 $+$i;O$^$j!"1 9T$N%V%i%s%/9T$G%j%;%C%H$5$l$^$9!#$3$l$O!"9TNs!"$^$?$O3J;R>u%G!<%?Fb$N%G!<%?9T$KBP1~$7$^$9!# |
| `column(-2)` | J#?t$N%G!<%?=89g$r;}$D%U%!%$%kFb$N!"8=:_$N%G!<%?=89g$N **index** HV9f!#0J2<;2>H: '**index**'!# |

**Xticlabels** <4$N9o$_$N8+=P$7 (ticlabel) $OJ8;zNs4X?t$K$h$C$F:n$k$3$H$b$G$-!"$=$l$ODL>o$O0z?t$H$7$F%G!<%?Ns$+$i<hF@$7$^$9!#:G$bC1=c$J7A<0$O!"%G!<%?Ns<+?H$NJ8;zNs$H$7$F$NMxMQ$G!"xticlabels(N) $O xticlabels(stringcolumn(N)) $N>JN,7A$H$7$F;H$($^$9!#0J2<$NNc$O 3 NsL\$NMWAG$r x <4$N9o$_$N8+=P$7$H$7$F;HMQ$7$^$9!#

```
plot 'datafile' using <xcol>:<ycol>:xticlabels(3) with <plotstyle>
```

<4$NL\@9$j$N8+=P$7$O!"G$0U$NIA2h<4 x,x2,y,y2,z MQ$K@8@.$G$-$^$9!#**ticlabels(<labelcol>)** ;XDj$O!"**using** ;XDj$NCf$G!"$=$N%G!<%?$N:BI8;XDj$,A4$F:Q$s$@8e$K9T$&I,MW$,$"$j$^$9!#M-8z$J X,Y[,Z] :BI8$NAH$r;}$D3F%G!<%?E@$KBP$7$F!"xticlabels() $KM?$($kJ8;zNsCM$O!"$=$l$KBP1~$9$kE@$N x :BI8$HF1$8>l=j$N x <4$N8+=P$7$N%j%9%H$KDI2C$5$l$^$9!#**xticlabels()** $O **xtic()** $H>JN,$9$k$3$H$b$G$-!"B>$N<4$K4X$7$F$bF1MM$G$9!#

Nc:

```
splot "data" using 2:4:6:xtic(1):ytic(3):ztic(6)
```

$3$NNc$G$O!"x <4!"y <4$N8+=P$7$O x,y :BI8CM$H$OJL$NNs$+$i<h$j=P$5$l$^$9$,!"z <4$N8+=P$7$O!"BP1~$9$kE@$N z :BI8CM$+$i@8@.$5$l$^$9!#

Nc:

```
plot "data" using 1:2:xtic( $3 > 10. ? "A" : "B" )
```

$3$NNc$O!"x <4$N8+=P$7$N@8@.$KJ8;zNsCM4X?t$r;HMQ$7$?$b$N$G!"%G!<%?%U%!%$%k$N3FE@$N x <4$N9o$_$N8+=P$7$O!"3 NsL\$NCM$K$h$C$F "A" $+ "B" $+$N$$$:$l$+$H$J$j$^$9!#

**X2ticlabels** 0J2<;2>H: **plot using xticlabels (p. 100)**!#

**Yticlabels** 0J2<;2>H: **plot using xticlabels (p. 100)**!#

**Y2ticlabels** 0J2<;2>H: **plot using xticlabels (p. 100)**!#

**Zticlabels** 0J2<;2>H: **plot using xticlabels (p. 100)**!#

### Volatile

plot %3%^%s%I$N%-!<%o!<%I **volatile** $O!"F~NO%9%H%j!<%`$+%U%!%$%k$+$i0JA0$KFI$_9~$s$@%G!<%?$,!":FFI$_9~$_;~$K$OM-8z$G$O$J$$$3$H$r0UL#$7$^$9!#$3$l$O!"**replot** %3%^%s%I$NBe$o$j$K!"2DG=$J8B$j **refresh** %3%^%s%I$r;H$&$h$& gnuplot $K;X<($7$^$9!#0J2<;2>H: **refresh (p. 109)**!#

## Errorbars

%(%i!<%P!<$O!"1 $+$i 4 8D$ND I2C$5$1$?%G!<%?$rF I$`($^$?$O%(%s%H%j$r **using** $GD I2CA*Br$9$k) $3$H$K$h$j!" 2 <!85%G!<%?$NIA2h$K$*$$$F<B8=$5$1$F$$$^$9!#$3$1$iD I2C$5$1$kCM$O!"$=$1$>$1$N%(%i!<%9%?%$%k$G0[ $J$C$?7A$G;H$o$1$^$9!#

%G%U%)%k%H$G$O!"**gnuplot** $O%G!<%?%U%!%$%k$N3F9T$K0J2<$N$h$&$J 3 $D!"4 $D!"$"$k$$$O 6 $D$NNs$,$"$k$3 $H$r4 |BT$7$F$$$^$9:

```
(x, y, ydelta),
(x, y, ylow, yhigh),
(x, y, xdelta),
(x, y, xlow, xhigh),
(x, y, xdelta, ydelta),
(x, y, xlow, xhigh, ylow, yhigh)
```

x :BI8$OI,$:;XDj$7$J$1$1$P$$$1$^$;$s!#3F?tCM$r=q$/=g=x$b>e$G5s$2$?DL$j$G$J$/$F$O$J$j$^$;$s!#$?$@!" **using** =$>~;R$r;H$($P$=$N=g=x$rA`:n$G$-$^$9$7!"7g$1$F$$$kNs$NCM$bJd$&$3$H$O2DG=$G$9$,!#Nc$($P!"

```
plot 'file' with errorbars
plot 'file' using 1:2:(sqrt($1)) with xerrorbars
plot 'file' using 1:2:($1-$3):($1+$3):4:5 with xyerrorbars
```

:G8e$NNc$O!"AjBPE*$Jx $N8m:9$H@dBPE*$Jy $N8m:9!"$H$$$&!"%5%]!<%H$5$1$F$$$J$$AH$N%U%!%$%k$KBP$9$k$b $N$G$9!#**using** %(%s%H%j$,AjBPE*$Jx $N8m:9$+$i@dBPE*$Jx $N:G>.CM$H:GBgCM$r@8@.$7$F$$$^$9!#

y $N%(%i!<%P!<$O!"(x, ylow) $+$i (x, yhigh) $X$N1tD>$J@~$H$7$FIA$+$1$^$9!#ylow $H yhigh $NBe$o$j$K ydelta $,;XDj$5$1$?$H$-$O!"ylow = y - ydelta, yhigh = y + ydelta $H$J$j$^$9!#$"$k9T$K%G!<%?$, 2 $D$7$+$J$1$1 $P!"ylow $H yhight $O$H$b$K y $H$J$j$^$9!#x %(%i!<%P!<$OF1MM$K7W;;$5$1$??eJ?@~$G$9!#%G!<%?$N3FE@$r7k $V@^$1@~$r0z$-$?$$>19g$O!"with errorbars $H with lines $r;XDj$7$F!"F1$8%G!<%?%U%!%$%k$r 2 2s **plot** $7$F 2<$5$$($?$@$7!"%-!<$NCf$K2 $D$N%(%s%H%j$r:n$i$J$$$h$&$K!"$=$N0 1J}$K$O **notitle** %*%W%7%g%s$r;H$&$3$H $rK:$1$J$$$G2<$5$$)!#B>$NA*Br;h$H$7$F!"errorlines %3%^%s%I$b$"$j$^$9(0J2<;2>H: **errorlines (p. 101)**)!#

%(%i!<%P!<$NC<$N9o$_$N0u$N8+$?L\$O!"**set errorbars** $G@)8f$G$-$^$9!#

<+F0HC0O;XDj$,M-8z$G$"$1$P!"$=$NIA2hHC0O$O%(%i!<%P!<$b4^$`$h$&$KD4@0$5$1$^$9!#

0J2<$b;2>H% (%i!<%P!<$N%G%b

99$J$k>pJs$K4X$7$F$O!"0J2<;2>H: **plot using (p. 98)**, **plot with (p. 106)**, **set style (p. 170)**!#

## Errorlines

8m:9@~(errorbar) $rH<$&@~IA2h$O!"2 <!85%G!<%?%U%!%$%k$NIA2h$G%5%]!<%H$5$1$F$$$F!"$=$1$O 1 8D$+$i 4 8D $ND I2C$N($^$?$O **using** $G;XDj$9$k) Ns%G!<%?$rM?$($k$3$H$G9T$J$o$1$^$9!#$3$1$i$ND I2C$5$1$kCM$O!"MM!9 $J errorline %9%?%$%k$N$=$1$>$1$G0[$J$C$?7A$G;H$o$1$^$9!#

%G%U%)%k%H$N>uBV$G$O!"**gnuplot** $O!"%G!<%?%U%!%$%k$N3F9T$K 3 8D!"4 8D!"6 8D$N$$$:$1$+$N8D?t$N%G!<%?$, $"$k$3$H$r4 |BT$7!"$=$1$>$10J2<$N$$$:$1$+$KBP1~$7$^$9!#

```
(x, y, ydelta),
(x, y, ylow, yhigh),
(x, y, xdelta),
(x, y, xlow, xhigh),
(x, y, xdelta, ydelta),
(x, y, xlow, xhigh, ylow, yhigh)
```

x :BI8$O;XDj$9$kI,MW$,$"$j$^$9$7!"%G!<%?$N=gHV$b>e$N7A<0$G$"$kI,MW$,$"$j$^$9$,!"**using** =$>~;R$G$=$N =gHV$rA`:n$7$?$j!"7g$1$F$$$kNs$KBP$9$kCM$rM?$($?$j$9$k$3$H$,$G$-$^$9!#Nc$($P

```
plot 'file' with errorlines
plot 'file' using 1:2:(sqrt($1)) with xerrorlines
plot 'file' using 1:2:($1-$3):($1+$3):4:5 with xyerrorlines
```

:G8e$NNc$O! "A jBPE*$J x $N8m: 9$H@dBPE*$J y $N8m: 9! "$H$$$&%5%]! <%H$5$1$F$$J$$AH9g$;$N%G! <%?$N%U%!%$ %k$KBP$9$k$b$N$G! "**using** $GA jBPE*$J8m: 9$+$i@dBPE*$J x $N:G> .CM$H:GBgCM$r@8@.$7$F$$^$9! #

y 8m: 9@~$O (x, ylow) $+$i (x, yhigh) $XIA2h$5$1$k=D@~$G$9! #ylow, yhigh Be$o$j$K ydelta $,;XD j$5$1$?>19g $O! "ylow = y - ydelta, yhigh = y + ydelta $H07$o$1$^$9! #$"$k9T$K2 $D$N%G! <%?$7$+$J$$>19g! "yhigh, ylow $ON>J}$H$b y $K$J$j$^$9! #x 8m: 9@~$OF1MM$NJ}K!$G7W;;$5$1$k?eJ?@~$G$9! #

% (%i! <%P! <$NC<$N9o$_$N0u$N8+$?L\$O! "**set errorbars** $G@)8f$G$-$^$9! #

<+F0=L<\ (autoscaling) $, ON $N>19g! "IA2hHO0O$08m: 9@~$,F~$k$h$&$KD4@0$5$1$^$9! #

9 9$J$k>pJs$K$D$$$F$O! "0J2<; 2>H: **plot using (p. 98)**, **plot with (p. 106)**, **set style (p. 170)**! #

### 4X?tIA2h (functions)

%3%^%s%I **plot**, **splot** $G$O! "%U%!%$%k$+$iF I$_9~$s$@%G! <%?$NIA2h$@$1$G$J$/! "AH$_9~$_4X?t$d%f! <%6D j5A4X ?t$rIA2h$9$k$3$H$b$G$-$^$9! #4X?t$NCM$O! "FHN)$J<4$ND L>o$NHO0O$KEO$C$F%G! <%?%5%s%W%k$r<h$k$3$H$GI >2A $7$^$9! #0J2<; 2>H: **set samples (p. 168)**, **set isosamples (p. 136)**! #

Nc:

```
      approx(ang) = ang - ang**3 / (3*2)
      plot sin(x) title "sin(x)", approx(x) title "approximation"
```

4X?t$N%G%U%)%k%H$NIA2h%9%?%$%k$r@_D j$9$kJ}K!$K$D$$$F$O! "0J2<; 2>H:**set style function (p. 173)**! #AH$_ 9~$_4X?t$N>pJs$K$D$$$F$O! "0J2<; 2>H:**expressions functions (p. 30)**! #<+A0$G4X?t$rD j5A$9$kJ}K!$K$D$$$F $O! "0J2<; 2>H:**user-defined (p. 36)**! #

### G^2pJQ?t%b! <%IIA2h (parametric)

G^2pJQ?t%b! <%I (**set parametric**) $G$O! "**plot** $G$O 2 $D$N?t<0$NAH$r! "**splot** $G$O 3 $D$N?t<0$NAH$rM?$ ($k I,MW$,$"$j$^$9! #

Nc:

```
      plot sin(t),t**2
      splot cos(u)*cos(v),cos(u)*sin(v),sin(u)
```

%G! <%?%U%!%$%k$OA0$HF1$8$h$&$KIA2h$5$1$^$9! #$?$@$7! "%G! <%?%U%!%$%k$,IA2h$N$?$a$KM?$ ($i$1$kA0$K! "G$ 0U$NG^2pJQ?t4X?t$,@h$K4 0A4$K;XD j$5$1$?>19g$r= |$$$F$G$9! #8@$$4 9$ ($k$H! "x $NG^2pJQ?t4X?t (>e$NNc$G$O **sin(t)**) $H y $NG^2pJQ?t4X?t (>e$NNc$G$O **t**2**) $H$N4V$K! "B>$N=$>~; R$d%G! <%?4X?t$r$O$5$_$3$s$G$O$$1$^ $;$s! #$=$N$h$&$J$3$H$r$9$k$H! "9=J8% (%i! <$K$J$j! "G^2pJQ?t4X?t$,4 0A4$K$O;XD j$5$1$F$$J$$! "$HI=< ($5$1 $^$9! #

**with** $d **title** $N$h$&$JB>$N=$>~; R$O! "G^2pJQ?t4X?t$N;XD j$,40N;$7$?8e$K;XD j$7$J$1$1$P$$$1$^$;$s! #

```
      plot sin(t),t**2 title 'Parametric example' with linespoints
```

0J2<$b; 2>H:G^2pJQ?t%b! <%I$N%G%b! #

### HO0O (ranges)

$3$N%;%/%7%g%s$G$O! "%3%^%s%I **plot** $N01HV:G=i$N9 `L\$H$7$F=q$/! "<4$NHO0O$N%*%W%7%g%s$K$D$$$F$N$_@bL@ $7$^$9! #$3$1$r;XD j$9$k$H! "$=$NHO0O$O! "$=$10JA0$N$I$N **set range** $K$h$kHO0O$N@)8B$h$j$bM%@h$7$F07$o$1 $^$9! #%3%^%s%I **plot** $NJL$J>1=j$K;XD j$9$k! "8D! 9$NIA2hMWAG$NHO0O$N@)8B$?$a$N%*%W%7%g%s$K$D$$$F$O0J2< ; 2>H: **sampling (p. 103)**! #

=q<0:

```
      [{<dummy-var>=}{{<min>}:{<max>}}]
      [{{<min>}:{<max>}}]
```

1 $DL\$N7A<0$NHO0O;XD j$OFHN)JQ?t$NHO0O (**xrange**! "$^$?$OG^2pJQ?t%b! <%I$G$N **trange**) MQ$G! "2 $DL\$N7A <0$O=>B0JQ?t$NHO0OMQ$G$9! #%*%W%7%g%s$N <dummy-var> $GFHN)JQ?t$N?7$7$$L>A0$rMxMQ$G$-$^$9 (%G%U%)%k %H$NJQ?tL>$O **set dummy** $GJQ99$G$-$^$9)! #

G^2pJQ?t%b! <%I (parametric) $G$J$1$1$P! "HO0O;XD j$O0J2<$N=g$KM?$ ($J$1$1$P$$$1$^$;$s:

```
plot [<xrange>][<yrange>][<x2range>][<y2range>] ...
```

G^2pJQ?t%b!<%I (parametric) $G$O!"HO0O;XDj$O0J2<$N=g$KM?$($J$1$l$P$$$1$^$;$s:

```
plot [<trange>][<xrange>][<yrange>][<x2range>][<y2range>] ...
```

0J2<$N **plot** %3%^%s%I$O!"**trange** $r [-pi:pi], **xrange** $r [-1.3:1.3], **yrange** $r [-1:1] $K@_Dj$9$kNc$G$9:

```
plot [-pi:pi] [-1.3:1.3] [-1:1] sin(t),t**2
```

* $O!"min (:G>.CM) $d max (:GBgCM) $K<+F0HO0O;XDj (autoscale) $N5!G=$r;H$&$3$H$r2DG=$K$7$^$9!#;XDj=g HV$N$?$a$@$1$KI,MW$JHO0O;XDj$K$O!"6u$NHO0O [] $r;H$C$F$/$@$5$$!#

**plot** $d **splot** $N%3%^%s%I9T$G;XDj$5$l$?HO0O$O$=$N%0%i%U0l$D$K$N$_1F6A$r5Z$\$7$^$9!#$h$C$F!"$=$N8e$N %0%i%U$N%G%U%)%k%H$NHO0O$rJQ99$9$k$K$O **set xrange** $d **set yrange** $r;HMQ$7$F$/$@$5$$!#

%j%s%/$5$l$?<4$KBP$7$F$O!"plot %3%^%s%I$G$N0l;~E*$JHO0O;XDj$N;HMQ$O!"4|BT$9$k7k2L$r@8$^$J$$$+$b$7$l $^$;$s (0J2<;2>H: **set link (p. 144)**)!#Be$o$j$K **set xrange** $H **set yrange** $NJ8$rJL!9$K;XDj$9$kJ}$,$$ $$$G$7$g$&!#

;~4V%G!<%?$KBP$7$F$O!"HO0O$O!"%G!<%?%U%!%$%k$+$iF|I$_9~$`$N$K;HMQ$9$k$N$HF1$8=q<0$G!"0zMQId$G0O$s$G ;XDj$9$kI,MW$,$"$j$^$9!#0J2<;2>H: **set timefmt (p. 180)**!#

Nc:

0J2<$O8=:_$NHO0O$r;HMQ$7$^$9:

```
plot cos(x)
```

0J2<$O x $NHO0O$N$_$N;XDj$G$9:

```
plot [-10:30] sin(pi*x)/(pi*x)
```

0J2<$O>e$HF1$8$G$9$,!"2>JQ?t$H$7$F t $r;H$$$^$9:

```
plot [t = -10 :30]  sin(pi*t)/(pi*t)
```

0J2<$O x $H y $NN>J}$NHO0O$N;XDj$G$9:

```
plot [-pi:pi] [-3:3]  tan(x), 1/x
```

0J2<$O!"y $NHO0O$N$_$N;XDj$G$9:

```
plot [ ] [-2:sin(5)*-8] sin(x)**besj0(x)
```

0J2<$O x $N:GBgCM$H y $N:G>.CM$N$_$N;XDj$G$9!#

```
plot [:200] [-pi:]  $mydata using 1:2
```

0J2<$O x $NHO0O$r;~7ONs%G!<%?$H$7$F;XDj$7$F$$$^$9:

```
set timefmt "%d/%m/%y %H:%M"
plot ["1/6/93 12:00":"5/6/93 12:00"] 'timedata.dat'
```

## %5%s%W%j%s%0 (sampling)

### 1 <!85$N%5%s%W%j%s%0 (x $^$?$O t <4) (1D sampling)

%G%U%)%k%H$G$O!"4X?t$d5?;w%U%!%$%k "+" $G@8@.$5$l$k%G!<%?$O!"IA2hHO0OA4BN$K$o$?$C$FI8K\ (%5%s%W%k) $,<h$i$l$^$9!#$3$NHO0O$O!";vA0$K%3%^%s%I **set xrange** $G@_Dj$9$k$+!"plot %3%^%s%I$+splot %3%^%s%I$N:G =i$N>l=j$GBg0hHO0O$rL@<(E*$K;XDj$9$k$+$7$J$1$l$P!"$=$N%0%i%U$N$9$Y$F$NMWAG$r4^$`HO0OFb$K%G!<%?A4BN $,F~$k$h$& x $NHO0O$r<+F0=L<\ (autoscaling) $7$^$9!#$7$+$7!"$=$NI8K\2=HO0O$O8D!9$NIA2hMWAGKh$K$5$i$K @)8B$7$F3d$jEv$F$k$3$H$b$G$-$^$9!#

Nc:

0J2<$O!"x A4BN$NHO0O$r 0 $+$i 1000 $H$7$F%U%!%$%k$N%G!<%?$rIA2h$7!"2 $D$N4X?t$rA4BN$NHO0O$N0lItJ,$@ $1$=$l$>$lIA2h$7$^$9:

```
plot [0:1000] 'datafile', [0:200] func1(x), [200:500] func2(x)
```

0J2<$O!">e$H$[$\F1MM$G$9$,!"A4BN$NHO0O$O%G!<%?%U%!%$%k$NFbMF$K$h$C$F7hDj$7$^$9!#$3$N>l9g!"I8K\2=$5$1$k4X?t$O!"A4BN$,%0%i%UFb$K<}$^$k$+$b$7$1$^$;$s$7!"<}$^$i$J$$$+$b$7$1$^$;$s:

```
set autoscale x
plot 'datafile', [0:200] func1(x), [200:500] func2(x)
```

0J2<$N%3%^%s%I$K$O$"$$$^$$$5$,4^$^$1$^$9!#@hF,$NHO0O$O!"B?J,:G=i$N4X?t$NI8K\2=$N$_$K8~$1$?$N$@$H;W$$$^$9$,!"<B:]$O$=$&$G$O$J$//!"$9$Y$F$NI8A2hMWAG$KE,MQ$9$k$h$&$K2r<a$5$1$^$9:

```
plot [0:10] f(x), [10:20] g(x), [20:30] h(x)
```

0J2<$N%3%^%s%I$O!">e$NNc$N$"$$$^$$$5$r=|$/$?$a$K%-!<%o!<%I **sample** $rDI2C$7$?$b$N$G!"$=$NHO0O;XDj$r plot A4BN$KE,MQ$7$J$$$h$&$K$7$F$$$^$9:

```
plot sample [0:10] f(x), [10:20] g(x), [20:30] h(x)
```

0J2<$NNc$O!"3 <!85%0%i%U$K$i$;$s$N6J@~$rIA$/0l$D$NJ}K!$rDs<($7$^$9:

```
splot [-2:2][-2:2] sample [h=1:10] '+' using (cos(h)):(sin(h)):(h)
```

### 2 <!85$N%5%s%W%j%s%0 (u $H v <4) (2D sampling)

5?;w%U%!%$%k '++' $KBP$7$F7W;;$9$k4X?tCM$d@8@.$5$1$?%G!<%?$O!"u, v <4$K1h$C$FI8K\2=(%5%s%W%j%s%0) $r9T$$$^$9!#$3$1$O!"5.2 $h$jA0$N%P!<%8%g%s$+$i$N;EMM$N!VJQ99!W$G!"=>Mh$O x, y <4$K1h$C$FI8K\2=$7$F$$$^$7$?!#0J2<;2>H: **special-filenames ++ (p. 97)**!#2 <!85$N%5%s%W%j%s%0$O **plot**, **splot** %3%^%s%I$G;HMQ$G$-$^$9!#

0J2<$O!"2 <!85$N **plot** %3%^%s%I$KBP$9$k 2 <!85%5%s%W%j%s%0$NNc$G$9!#$3$1$O!"IA2h%9%?%$%k **with vectors** $GI=<($5$1$k%0%i%U$r@8@.$7$^$9!#0J2<;2>H: **vectors (p. 67)**!#

```
set urange [ -2.0 : 2.0 ]
set vrange [ -2.0 : 2.0 ]
plot '++' using ($1):($2):($2*0.4):(-$1*0.4) with vectors
```

0J2<$O 3 <!85$N **splot** %3%^%s%I$KBP$9$k 2 <!85%5%s%W%j%s%0$NNc$G$9!#$3$1$O!"**sampling.dem** $G;HMQ$5$1$F$$$k$b$N$K;w$?%3%^%s%INs$G$9!#$3$N2 $D$N6JLL$O!"@8@.$5$1$k%0%i%U$NHO0OA4BN$h$j$b69$$ u, v $NHO0O$GI8K\2=$r9T$&$3$H$KCm0U$7$F$/$@$5$$!#

```
set title "3D sampling range distinct from plot x/y range"
set xrange [1:100]
set yrange [1:100]
splot sample [u=30:70][v=0:50] '++' using 1:2:(u*v) lt 3, \
      [u=40:80][v=30:60] '++' using (u):(v):(u*sqrt(v)) lt 4
```

u, v $N%5%s%W%j%s%0$NHO0O;XDj$K$O!"%5%s%W%j%s%0%G!<%?$N?t$H%9Z!<%9$r@)8f$9$k!"L@<(E*$J%5%s%W%j%s%04V3V$rF~$1$k$3$H$b$G$-$^$9:

```
splot sample [u=30:70:1][v=0:50:5] '++' using 1:2:(func($1,$2))
```

## Plot %3%^%s%I$N for %k!<%W (for loops in plot command)

B?$/$NF1Ey$N%U%!%$%k$d4X?t$rF1;~$KIA2h$9$k>l9g$O!"$=$1$>$1$N plot %3%^%s%I$N7+$jJV$7 (iteration) $G$=$1$r9T$&$N$,JXMx$G$9!#

=q<0:

```
plot for [<variable> = <start> : <end> {:<increment>}]
plot for [<variable> in "string of words"]
```

7+$jJV$7$NE,MQHO0O (scope) $O!"<!$N%3%s%^ (,) $+%3%^%s%I$N=*$o$j!"$N$$$:$1$+@h$K8=$1$?$H$3$m$^$G$G$9!#$?@$7!"IA2h$9$k9`L\$NA0$KD j5A<0 (J#?t$b2D) $,JB$s$G$$$k>l9g$O!"%3%s%^$,4V$KF~$C$F$$$F$b=$NNc3 0$H$J$j$^$9!#

7+$jJV$7$OG^2pJQ?t%b!<%I (parametric) $G$O5!G=$7$J$$$3$H$KCm0U$7$F$/

$@$5$$!#

Nc:

```
plot for [j=1:3] sin(j*x)
```

Nc:

```
plot for [dataset in "apples bananas"] dataset."dat" title dataset
```

$3$NNc$G$O!"7+$jJV$7$O%U%!%$%kL>$HBP1~$9$k%?%$%H%k$N@8@.$NN>J}$G;H$o$l$F$$$^$9!#

Nc:

```
file(n) = sprintf("dataset_%d.dat",n)
splot for [i=1:10] file(i) title sprintf("dataset %d",i)
```

$3$NNc$O!"%U%!%$%kL>$G@8@.$5$l$kJ8;zNsCM4X?t$rDj5A$7!"$=$N$h$&$J10 8D$N%U%!%$%k$rF1;~$KIA2h$7$^$9!# 7+$jJV$7$NJQ?t ($3$NNc$G$O'i') $O0l$D$N@0?t$H$7$F07$o$l!"$=$l$r2 EY0J>e;HMQ$G$-$^$9!#

Nc:

```
set key left
plot for [n=1:4] x**n sprintf("%d",n)
```

$3$NNc$O!"4X?t$NAH$rIA2h$7$^$9!#

Nc:

```
list = "apple banana cabbage daikon eggplant"
item(n) = word(list,n)
plot for [i=1:words(list)] item(i).".dat" title item(i)
list = "new stuff"
replot
```

$3$NNc$G$O!"%j%9%H$K=>$C$F3F%9%F%C%W$,?J9T$7!"$=$N3F9`L\$KBP$7$F0l$D$NIA2h$,9T$o$l$^$9!#$3$N3F9`L\$OF0E*$K<hF@$5$l$^$9$N$G!"$=$N%j%9%H$rJQ99$7!"$=$N$^$^replot $9$k$3$H$,$G$-$^$9!#

Nc:

```
list = "apple banana cabbage daikon eggplant"
plot for [i in list] i.".dat" title i
list = "new stuff"
replot
```

$3$NNc$O!"@0?t$N7+$jJV$7JQ?t$G$O$J$/!"J8;zNs$N7+$jJV$7JQ?t7A<0$rMQ$$$F$$$k$3$H0J30$OA0$NNc$HA4$/F1 $8$G$9!#

<end> $N@0?t$NBe$o$j$K5-9f* $r;HMQ$9$l$P!"7+$jJV$7$O$9$Y$F$NM-8z$J%G!<%?$,$J$/$J$k$^$G$N7+$jJV$7 $H$J$j$^$9!#$3$l$O!"3F9T$K4^$^$l$k$9$Y$F$NNs$N=hM}!"$"$k$$$O%U%!%$%kFb$N$9$Y$F$N%G!<%?%;%C%H (2 9T $N6u9T$G6h@Z$i$l$k) $N=hM}!";XDj$KEv$F$O$^$k$9$Y$F$N%U%!%$%k$J$I$r0lEY$K=hM}$9$k$N$KJXMx$G$9!#

Nc:

```
plot for [i=2:*] 'datafile' using 1:i with histogram
splot for [i=0:*] 'datafile' index i using 1:2:3 with lines
plot for [i=1:*] file=sprintf("File_%03d.dat",i) file using 2 title file
```

## Title

%G%U%)%k%H$G$O3F6J@~$O!"BP1~$9$k4X?t$d%U%!%$%kL>$G%-!<$NCf$K0lMwI=<($5$l$^$9$,!"plot $N%*%W%7%g%s **title** $r;H$&$3$H$G!"L@<(E*$J%?%$%H%k$rM?$($k$3$H$b$G$-$^$9!#

=q<0:

```
title <text> | notitle [<ignored text>]
title columnheader | title columnheader(N)
      {at {beginning|end}} {{no}enhanced}
```

$3$3$G <text> $O!"0zMQId$G0O$^$l$?J8;zNs$+!"J8;zNs$HI>2A$5$l$k<0$N$$$:$l$+$G$9!#0zMQId$O%-!<$K$OI=<($5$l$^$;$s!#

F~NO%G!<%?$NNs$N:G=i$N9`L\($9$J$o$ANs$N@hF,) $rJ8;zNs%U%#!<%k%I$H2r<a$7!"$=$l$r%-!<%?%$%H%k$H$7$F MxMQ$9$k%*%W%7%g%s$b$"$j$^$9!#0J2<;2>H:**datastrings (p. 27)**!#$3$l$O!"**set key autotitle columnhead** $r;XDj$9$l$P%G%U%)%k%H$N5sF0$H$J$j$^$9!#

6J@~%?%$%H%k$H%5%s%W%k$OM=Ls8l **notitle** $r;H$&$3$H$G%-!<$+$i:o=|$G$-$^$9!#2?$b$J$$%?%$%H%k (**title ''**) $O **notitle** $HF1$80UL#$r;}$A$^$9!#%5%s%W%k$@$1$,M_$7$$$H$-$O!"0l$D0J>e$N6uGr$r%?%$%H%k$N8e$m$KF~$l$F $/$@$5$$ (**tilte ' '**)!#**notilte** $N8e$m$KJ8;zNs$r$D$1$?>l9g!"$=$NJ8;zNs$OL5;k$5$l$^$9!#

**key autotitles** $,@_Dj$5$l$F (%G%U%)%k%H)!"$+$D **title** $b **notitle** $b;XDj$5$l$J$+$C$?>l9g!"6J@~$N%?%$%H %k$O **plot** %3%^%s%I>e$K$"$k4X?tL>$+%G!<%?%U%!%$%kL>$K$J$j$^$9!#%U%!%$%kL>$N>l9g$O!";XDj$5$l$kG$0U$N %G!<%?%U%!%$%k=$>~;R$b$=$N%G%U%)%k%H%?%$%H%k$K4^$^$l$^$9!#

0LCV$d%?%$%H%k$N0LCVB7$($J$I$NK^Nc$N%l%$%"%&%H$O!"**set key** $G@)8f$G$-$^$9!#>\:Y$O!"0J2<;2>H: **set key (p. 137)**!#

%-!<%o!<%I **at** $K$h$j!"6J@~$N%?%$%H%k$r!"<+F0E*$K:n$i$l$k key $NH"$N30$K$G$bCV$/$3$H$,$G$-$k$h$&$K$J $j$^$9!#**at {beginning|end}** $r;HMQ$7$?>l9g$O!"6J@~$N%?%$%H%k$r%0%i%U$N6J@~<+?H$ND>A0!"$"$k$$$OD>8e $KCV$-$^$9!#$3$N%*%W%7%g%s$O!"**with lines** $GIA2h$9$k>l9g$OM-MQ$G$9$,!"B>$NIA2h%9%?%$%k$G$OL50UL#$G$9!#

**at <x-position>,<y-position>** $N7A<0$r;HMQ$9$l$P!"6J@~$N%?%$%H%k$r%Z!<%8Fb$NG$0U$N0LCV$KCV$/$3$H $,$G$-$^$9!#%G%U%)%k%H$G$O!"$=$N0LCV;XDj$O%9%/%j!<%s:BI8$H2r<a$7$^$9!#Nc$($P **at 0.5, 0.5** $O!"%0%i%U $N<4$K=L<\$d6-3&$K$O4X78$J$/!">o$K%9%/%j!<%s$N$I?$sC f$r0UL#$7$^$9!#$3$NJ}K!$GG[CV$9$k%?%$%H%k$N=q <0$O!"key $N%*%W%7%g%s;XDj$N1F6A$r<u$1$^$9!#0J2<;2>H:**set key (p. 137)**!#

Nc:

0J2<$O y=x $r%?%$%H%k 'x' $GI=<($7$^$9:

```
plot x
```

0J2<$O!"x $N 2 >h$r%?%$%H%k "x^2" $G!"%U%!%$%k "data.1" $r%?%$%H%k"measured data" $GI=<($7$^$9:

```
plot x**2 title "x^2", 'data.1' t "measured data"
```

0J2<$O!"%U%!%$%k$N@hF,9T$N3FNs$K%?%$%H%k$r4^$`J#?tNs$N%G!<%?$rIA2h$7$^$9!#3F%?%$%H%k$O!"FHN)$7$?K^ Nc$G$O$J$/!"BP1~$9$k6J@~$N8e$m$KCV$-$^$9:

```
unset key
set offset 0, graph 0.1
plot for [i=1:4] 'data' using i with lines title columnhead at end
```

0J2<$O!"2 $D$NJL!9$N%0%i%U$N key $N>l=j$r 1 2U=j$K$7$^$9:

```
set key Left reverse
set multiplot layout 2,2
plot sin(x) with points pt 6 title "Left plot is sin(x)" at 0.5, 0.30
plot cos(x) with points pt 7 title "Right plot is cos(x)" at 0.5, 0.27
unset multiplot
```

## With

4X?t$d%G!<%?$NI=<($K$O$?$/$5$s$N%9%?%$%k$N$&$A$N0l$D$r;H$&$3$H$,$G$-$^$9!#%-!<%o!<%I **with** $,$=$NA* Br$N$?$a$KMQ0U$5$l$F$$$^$9!#

=q<0:

```
with <style> { {linestyle | ls <line_style>}
               | {{linetype  | lt <line_type>}
                  {linewidth | lw <line_width>}
                  {linecolor | lc <colorspec>}
                  {pointtype | pt <point_type>}
                  {pointsize | ps <point_size>}
                  {fill | fs <fillstyle>} {fillcolor | fc <colorspec>}
                  {nohidden3d} {nocontours} {nosurface}
```

```
                        {palette}}
                   }
```

$3$3$G!"<style> $OOJ2<$N$$:$1$+:

```
    lines         dots        steps     errorbars     xerrorbar    xyerrorlines
    points        impulses    fsteps    errorlines    xerrorlines  yerrorbars
    linespoints   labels      histeps   financebars   xyerrorbars  yerrorlines
    surface       vectors     parallelaxes
```

$^$?$O!"

```
    boxes          boxplot        ellipses       histograms  rgbalpha
    boxerrorbars   candlesticks   filledcurves   image       rgbimage
    boxxyerror     circles        fillsteps      pm3d        zerrorfill
```

$^$?$O

```
    table
```

:G=i$N%0%k!<%W$N%9%?%$%k$O!"@~!"E@!"J8;z$NB0@-$r;}$A!"Bh2 $N%0%k!<%W$N%9%?%$%k$O!"$5$i$KEI$jDY$7B0@-$b;}$C$F$$$^$9!#0J2<;2>H: **fillstyle (p. 172)**!#$5$i$K%5%V%9%?%$%k$r;}$D%9%?%$%k$b$"$j$^$9!#8D!9$N%9%?%$%k$N>\:Y$K$D$$$F$O!"0J2<;2>H: **plotting styles (p. 52)**!#%9%?%$%k **table** $O!"%0%i%U$NBe$o$j$KI=7A<0$N=PNO$r@8@.$7$^$9!#0J2<;2>H: **set table (p. 177)**!#

%G%U%)%k%H$N%9%?%$%k$O!"**set style function** $H **set style data** $GA*Br$G$-$^$9!#

%G%U%)%k%H$G$O!"$=$1$>$1$N4X?t$d%G!<%?%U%!%$%k$O!";H$&$3$H$,$G$-$k7?$N:GBg?t$KC#$9$k$^$G0[$J$k@~<o!"E@<o$r;H$$$^$9!#$9$Y$F$NC<KvMQ%I%i%$%P$O:GDc6 $D$N0[$J$kE@<o$r%5%]!<%H$7$F$$$F!"$b$7$?$/$5$s$MW5a$5$1$?>l9g!"$=$1$i$r=g$K:FMxMQ$7$F$$$-$^$9!#;HMQCf$N=PNO7A<0$G$N@~<o!"E@<o$N=89gA4BN$r8+$?$1$1$P!" **test** $H$7$F$/$@$5$$!#

0l$D$NIA2h$G@~<o$dE@<o$rA*$S$?$$$J$i$P!"<line_type> $d <point_type> $r;XDj$7$F$/$@$5$$!#$3$1$i$NCM$O!"$=$NIA2h$G;H$o$1$k@~<o$dE@<o$r;XDj$9$k@5$N@0Dj?t ($^$?$O?t<0) $G$9!#;HMQ$9$kC<Kv$G;H$ ($k@~<o!"E@<o$rI=<($9$k$K$O **test** %3%^%s%I$r;H$C$F$/$@$5$$!#

IA2h$N@~$NI}$dE@$NBg$-$5$O <line_width> $d <point_size> $GJQ99$G$-$^$9!#$3$1$i$O$=$N3F!9$NC<Kv$N%G%U%)%k%H$NCM$KBP$9$kAjBPE*$JCM$H$7$F;XDj$7$^$9!#E@$NBg$-$5$OA4BN$KDIMQ$9$k$h$&$KJQ99$G$-$^$9!#>\:Y$O!"0J2<;2>H: **set pointsize (p. 166)**!#$7$+$7!"$3$3$G%;%C%H$5$1$k <point_size> $H!"**set pointsize** $G%;%C%H$5$1$kBg$-$5$O!"$$:$1$b%G%U%)%k%H$N%]%$%s%H%5%$%:$K3]$1$i$1$k$3$H$KCm0U$7$F$/$@$5$$!#$9$J$o$A!"$=$1$i$N8z2L$ON_@Q$O$7$^$;$s!#Nc$($P!"**set pointsize 2; plot x w p ps 3** $O!"%G%U%)%k%H$N%5%$%:$N3G\$G$"$C$F!"6 G\$G$O$"$j$^$;$s!#

%i%$%s%9%?%$%k$N0lItJ,!"$"$k$$$O3F plot $K$*$$$F **pointsize variable** $H$$&;XDj$b2DG=$G$9!#$3$N>l9g!"F~NO$K$ODI2C$N1 Ns$,MW5a$5$1$^$9!#Nc$($P 2D IA2h$G$O3 Ns!"3D IA2h$G$O4 Ns$N%G!<%?$,I,MW$K$J$j$^$9!#8D!9$NE@$N%5%$%:$O!"A4BN$rDL$7$F$N pointsize $K!"%G!<%?%U%!%$%k$+$i$NF~NO$K$h$kCM$r$+$1$?$b$N$H$7$F7hDj$5$1$^$9!#

**set style line** $r;H$C$F@~<o/@~I}!"E@<o/E@I}$NAH$rDj5A$9$1$P!"$=$N%9%?%$%k$NHV9f$r <line_style> $K%;%C%H$9$k$3$H$G$=$1$i$r;H$&$3$H$,$G$-$^$9!#

gnuplot $, **pm3d** $r%5%]!<%H$9$k$h$&$K%$%s%9%H!<%k$5$1$F$$$k$J$i$P!"**splot** $K$*$$$F lines, points, dots $N?'$r3j$i$+$KJQ2=$5$;$k$?$a$NFCJL$J%-!<%o!<%I **palette** $,;H$($^$9!#$=$N?'$O!"%3%^%s%I **set palette** $G$"$i$+$8$a@_Dj$5$1$?3j$i$+$KJQ2=$9$k%+%i!<%Q%l%C%H$+$iA*Br$7$^$9!#?'$NCM$O!"E@$Nz :BI8$NCM$+!"$^$?$O **using** $G4 HVL\$N%Q%i%a!<%?$H$7$F;XDj$5$1$k?':BI8$KBP1~$7$^$9!#2 <!85!"3 <!85$NIA2h (**plot** $H **splot** %3%^%s%I) $NN>J}$G!"%Q%l%C%H?'$r>.?tCM$+$^$?$O%+%i!<\%C%/%9$NHO0O$XBP1~$E$1$i$l$?CM$N$$:$1$+$G;XDj$9$k$3$H$,$G$-$^$9!#%Q%l%C%H?'$NCM$O!"**using** ;XDj$GL@<(E*$K;XDj$5$1$?F~NONs$+$iFI$_9~$`$3$H$b2DG=$G$9!#0J2<;2>H: **colors (p. 40)**, **set palette (p. 161)**, **linetype (p. 143)**!#

%-!<%o!<%I **nohidden3d** $O!"**splot** %3%^%s%I$G@8@.$5$1$kIA2h$K$N$_E,MQ$5$1$^$9!#DL>o!"%0%m!<%P%k$J%*%W%7%g%s **set hidden3d** $O%0%i%U>e$NA4$F$NIA2h$KE,MQ$5$1$^$9$,!"3F!9$NIA2h$K **nohidden3d** %*%W%7%g%s $r$D$1$k$3$H$G!"$=$1$r hidden3d $N=hM}$+$i=|30$9$k$3$H$,$G$-$^$9!#**nohidden3d** $,%^!<%/$5$1$?6JLI0J30$N8D!9$NIA2hMWAG (@~J,!"E@!"%i%Y%kEy) $O!"DL>o$OB>$N2?$i$+$NIA2hMWAG$G1#$5$1$F$7$^$&>l9g$bA4$FIA2h$5$1$^$9!#

F1MM$K!"%-!<%o!<%I **nocontours** $O!"%0%m!<%P%k$K **set contour** ;XDj$,M-8z$J>l9g$G$b!"8DJL$N plot $KBP$9$kEy9b@~IA2h5!G=$r%*%U$K$7$^$9!#

F1MM$K! "%-! <%o! <%I **nosurface** $O! "%0%m! <%P%k$K **set surface** ;XD j$ ,M-8 z$ J> 19 g$ G$ b! "8DJL$N plot $KBP$ 9$k 3 < !8 56 JLLIA2 h$ r% *%U$ K$ 7$ ^$ 9! #

%-! <%o! <%I$ O0E< ($ 9$ k$ h$ &$ J7A$ G> JN ,2DG=$ G$ 9! #

**linewidth**, **pointsize**, **palette** %*%W% 7% g% s$ OA 4$ F$ NC<KvAuCV$ G% 5% ]! <%H$ 5$ 1$ F$ $$ k$ o$ 1$ G$ O$ J$ $$ 3$ H$ KCm0U $ 7$ F$ /$ @$ 5$ $! #

Nc:

0J2 <$O! "sin(x) $ r1tD>@ ~$ GIA2 h$ 7$ ^$ 9:

```
plot sin(x) with impulses
```

0J2 <$O! "x $ rE@$ GIA2 h$ 7! "x**2 $ r% G% U% )% k% H$ NJ }< 0$ GIA2 h$ 7$ ^$ 9:

```
plot x w points, x**2
```

0J2 <$O! "tan(x) $ r4X?t$ N% G% U% )% k% H$ NJ }< 0$ G! ""data.1" $ r@ ^$ 1@ ~$ GIA2 h$ 7$ ^$ 9:

```
plot [ ] [-2:5] tan(x), 'data.1' with l
```

0J2 <$O! ""leastsq.dat" $ r1tD>@ ~$ GIA2 h$ 7$ ^$ 9:

```
plot 'leastsq.dat' w i
```

0J2 <$O! "%G! <% ?% U% !% $% k "population" $ r6k7A$ GIA2 h$ 7$ ^$ 9:

```
plot 'population' with boxes
```

0J2 <$O! ""exper.dat" $ r% (% i! <%P! <IU$ -$ N@ ^$ 1@ ~$ GIA2 h$ 7$ ^$ 9 (% (% i! <%P! <$ O3 Ns! "$ "$ k$ $$ O 4 Ns$ N% G! <% ?$ r I ,MW$ H$ 7$ ^$ 9):

```
plot 'exper.dat' w lines, 'exper.dat' notitle w errorbars
```

$b$ &0 1$ D$ N "exper.dat" $ N% (% i! <%P! <IU$ -$ N@ ^$ 1@ ~ (errorlines) $ G$ NIA2 hJ }K ! (% (% i! <%P! <$ O 3 Ns! "$ "$ k$ $$ O 4 Ns$ N% G! <% ?$ ,I ,MW):

```
plot 'exper.dat' w errorlines
```

0J2 <$O! "sin(x) $ H cos(x) $ r% ^! <% +! <IU$ -$ N@ ^$ 1@ ~$ GIA2 h$ 7$ ^$ 9! #@ ^$ 1@ ~$ OF 1$ 8@ ~< o$ G$ 9$ ,! "% ^! <% +! <$ O0 [$ J$ C $ ?$ b$ N$ r; H$ $$ ^$ 9:

```
plot sin(x) with linesp lt 1 pt 3, cos(x) with linesp lt 1 pt 4
```

0J2 <$O! ""data" $ rE@< o 3 $ G! "E@$ NBg$ -$ 5$ rDL> o$ N 2 G\$ GIA2 h$ 7$ ^$ 9:

```
plot 'data' with points pointtype 3 pointsize 2
```

0J2 <$O! ""data" $ rIA2 h$ 7$ ^$ 9$ ,! "4 NsL\$ +$ iF I$ s$ @% G! <% ?$ r pointsize $ NCM$ H$ 7$ F; HMQ$ 7$ ^$ 9:

```
plot 'data' using 1:2:4 with points pt 5 pointsize variable
```

0J2 <$O! "2 $ D$ N% G! <% ?=89 g$ KBP$ 7$ F! "I }$ N$ _0 [$ J$ k@ ~$ rMQ$ $$ FIA2 h$ 7$ ^$ 9:

```
plot 'd1' t "good" w l lt 2 lw 3, 'd2' t "bad" w l lt 2 lw 1
```

0J2 <$O! "x*x $ N6J@ ~$ NFbIt$ NEI$ j$ D$ V$ 7$ H?'$ NBS$ rIA2 h$ 7$ ^$ 9:

```
plot x*x with filledcurve closed, 40 with filledcurve y=10
```

0J2 <$O! "x*x $ N6J@ ~$ H?'$ NH "$ rIA2 h$ 7$ ^$ 9:

```
plot x*x, (x>=-5 && x<=5 ? 40 : 1/0) with filledcurve y=10 lt 8
```

0J2 <$O! "3 j$ i$ +$ KJQ2=$ 9$ k?'$ N@ ~$ G6JLL$ rIA2 h$ 7$ ^$ 9:

```
splot x*x-y*y with line palette
```

0J2 <$O! "2 $ D$ N?'$ N$ D$ $$ ?6JLL$ r! "0 [$ J$ k9b$ 5$ GI=< ($ 7$ ^$ 9:

```
splot x*x-y*y with pm3d, x*x+y*y with pm3d at t
```

# Print

**print** %3%^%s%I$O < <0> $NCM$r2hLL$KI=< ($7$^$9! #$3$l$O **pause 0** $HF1$8$G$9! #< <0> $O! "?t$r@8@.$9$k **gnuplot** $N?t<0$+! "$^$?$OJ8; zNs$G$9! #

=q<0:

```
print <<0> {, <<0>, ...}
```

0J2<; 2>H: **expressions (p. 29)** ! #=PNO%U% !%$%k$O **set print** $G@_Dj$G$-$^$9! #0J2<$b; 2>H: **printerr (p. 109)** ! #

# Printerr

**printerr** $O print %3%^%s%I$H$[$\F1$8$G$9$,! "$=$NA0$N **set print** %3%^%s%I$N8z2L$,B3$$$F$$$k>uBV$G$b=PNO$r>o$K stderr $KAw$k$H$3$m$@$1$,0c$$$^$9! #

# Pwd

**pwd** %3%^%s%I$O%+%l%s%H%G%#%l%/%H%j$NL>A0$r2hLL$KI=< ($7$^$9! #

%+%l%s%H%G%#%l%/%H%j$rJ8; zNsJQ?t$KJ]B8$7$?$j! "J8; z<0$NCf$G; H$$$?$$>l9g$O! "JQ?t GPVAL_PWD $r; H$&$3$H$,$G$-$k$3$H$KCm0U$7$F$/$@$5$$! #0J2<; 2>H: **show variables all (p. 182)** ! #

# Quit

**exit** $H **quit** $NN>%3%^%s%I$H END-OF-FILE J8; z$O! "**gnuplot** $r=*N;$5$;$^$9! #$3$l$i$N%3%^%s%I$O! "=PNOAuCV$r (**clear** %3%^%s%I$HF1MM$K) %/%j%"$7$F$+$i=*N;$5$;$^$9! #

# Raise

=q<0:

```
raise {plot_window_id}
lower {plot_window_id}
```

%3%^%s%I **raise** $H **lower** $O! "=PNO7A<0$N$$$/$D$+$K$7$+5 !G=$;$:! "$=$7$F$"$J$?$,; HMQ$9$k%&%#%s%I%&%^%M! <%8%c$dI=< (M%@h5 !G=$N@_Dj$K$b0MB8$9$k2DG=@-$,$"$j$^$9! #

```
set term wxt 123     # :G=i$NIA2h%&%#%s%I%&$r@8@.
plot $FOO
lower                # B8:_$9$kIA2h%&%#%s%I%&$N$_$r2<$K
set term wxt 456     # 2 $DL\$r@8@. (1 $DL\$N>e$K$+$V$k)
plot $BAZ
raise 123            # 1 $DL\$NIA2h%&%#%s%I%&$r>e$K
```

$3$l$i$N%3%^%s%I$O! "$"$^$jEv$F$K$J$i$J$$$H; W$C$F$/$@$5$$! #

# Refresh

%3%^%s%I **refresh** $O! "**replot** $K; w$F$$$^$9$,! "<g$K2 $D$NE@$G0c$$$,$"$j$^$9! #**refresh** $O! "4{$KFI$_9~$s$@%G! <%?$rMQ$$$F! "8=:_$NIA2h$r:F@07A$7:FIA2h$7$^$9! #$3$l$O! "**refresh** $r (5?; w%G%P%$%9'-' $+$i$N) %$%s%i%$%s%G! <%?$NIA2h! "$*$h$SFbMF$,JQ2=$7$&$k%G! <%?%U% !%$%k$+$i$NIA2h$K; H$ ($k$H$$$&$3$H$r0UL#$7$^$9! #$?$@$7! "%3%^%s%I **refresh** $O! "4{$KB8:_$9$kIA2h$K?7$7$$%G! <%?$rDI2C$9$k$N$K$O; H$ ($^$;$s! #

%^%&%9A `:n! "FC$K%:!<% `%$%s$H%:!<% `%"%&%H$G$O! "E,@Z$J>l9g$O **replot** $NBe$o$j$K$ `$7$m **refresh** $r; HMQ$7$^$9! #Nc:

```
plot 'datafile' volatile with lines, '-' with labels
100 200 "Special point"
e
# ?’$s$J%^%&%9A‘:n$r$3$3$G<B9T
set title "Zoomed in view"
set term post
set output 'zoom.ps'
refresh
```

## Replot

**replot** %3%^%s%I$r0z?t$J$7$G<B9T$9$k$H!":G8e$K<B9T$7$? **plot** $^$?$O**splot** %3%^%s%I$r:F<B9T$7$^$9!#$3$l$O!"$"$k%W%m%C%H$r0[$J$k**set** %*%W%7%g%s$G$_$?$j!"F1$8%W%m%C%H$r0[$J$kAuCV$K=PNO$7$?$j$9$k$H$-$KJXMx$G$7$g$&!#

**replot** %3%^%s%I$KBP$9$k0z?t$O:G8e$K<B9T$7$? **plot** $^$?$O **splot** %3%^%s%I$N0z?t$K (0EL[$N ',' $H6&$K) DI2C$5$l!"$=$l$+$i:F<B9T$5$l$^$9!#**replot** $O!"HO0O (range) $r=|$$$F$O!"**plot** $d **splot** $HF1$80z?t$r$H$k$3$H$,$G$-$^$9!#$h$C$F!"D>A0$N%3%^%s%I$, **splot** $G$O$J$/ **plot** $N>l9g$O!"4X?t$r$b$&0l$D$N<49o$_$G%W%m%C%H$9$k$N$K **replot** $r;H$&$3$H$,$G$-$^$9!#

Cm0U:

```
plot '-' ; ... ; replot
```

$H$$$&;H$$J}$O?d>)$5$l$^$;$s!#$=$l$O!"$3$l$,$"$J$?$K:F$SF1$8%G!<%?$9$Y$F$NF~NO$rMW5a$9$k$3$H$K$J$k$+$i$G$9!#$?$$$F$$$N>l9g!"Be$o$j$K%3%^%s%I**refresh** $r;H$($^$9!#$3$l$O!"0JA0$KFI$_9~$s$@%G!<%?$r;H$C$F%0%i%U$r:FIA2h$7$^$9!#

**multiplot** %b!<%I$G$O!"**replot** %3%^%s%I$O$9$Y$F$N plot $G$O$J$/!"D>A0$N plot ItJ,$@$1$7$+:F<B9T$7$J$$$3$H$KCm0U$7$F$/$@$5$$!#

:G8e$K<B9T$7$? **plot** (**splot**) %3%^%s%I$NFbMF$r=$@5$9$kJ}K!$K$D$$$F$O0J2<$b;2>H: **command-line-editing (p. 25)**!#

D>A0$NIA2h%3%^%s%I$NA4BN$rI=<($5$;$k$3$H$d!"$=$l$r **history** $NCf$K%3%T!<$9$kJ}K!$K$D$$$F$O!"0J2<$b;2>H: **show plot (p. 157)**!#

## Reread

**reread** %3%^%s%I$O!"**load** %3%^%s%I$^$?$O%3%^%s%I%i%$%s$G;XDj$7$?**gnuplot** $N%3%^%s%I%U%!%$%k$r!"$=$N<!$N%3%^%s%I$,FI$^$l$kA0$K!"3+;OE@$K:F@_Dj$7$^$9!#$3$l$O!"%3%^%s%I%U%!%$%k$N:G=i$+$i **reread** %3%^%s%I$^$G$N%3%^%s%I$NL58B%k!<%W$rK\<AE*$K<BAu$7$F$$$k$3$H$K$J$j$^$9!#($7$+$7!"$3$l$O2?$b0-$$$3$H$G$O$"$j$^$;$s!#**reread** $O **if** $HAH$_9g$o$;$k$3$H$G$H$F$bM-MQ$J%3%^%s%I$H$J$j$^$9!#) I8=`F~NO$+$i$NF~NO$N>l9g$O!"**reread** %3%^%s%I$O2?$b1F6A$rM?$($^$;$s!#

Nc:

%U%!%$%k "looper" $,<!$N$h$&$J%U%!%$%k$G

```
a=a+1
plot sin(x*a)
pause -1
if(a<5) reread
```

$=$7$F!"**gnuplot** $+$i<!$N$h$&$K<B9T$9$k$H$7$^$9!#

```
a=0
load 'looper'
```

$9$k$H!"pause $N%a%C%;!<%8$GJ,3d$5$l$? 5 2s$N%W%m%C%H$,9T$o$l$k$3$H$K$J$j$^$9!#

%U%!%$%k "data" $,!"3F9T$K!"0 $+$i 10 $^$G$NHO0O (yrange) $N 6 $D$N%G!<%? $r;}$A!":G=i$, x :BI8$G!"$=$NB>$O 5 $D$N0[$J$k4X?t$N!"$=$N x $G$NCM$G$"$k$H$7$^$9!#$=$7$F!"%U%!%$%k "plotter" $,

```
c_p = c_p+1
plot "$0" using 1:c_p with lines linetype c_p
if(c_p <  n_p) reread
```

$G! "**gnuplot** $+$i<!$N$h$&$K<B9T$9$k$H$7$^$9!#

```
n_p=6
c_p=1
unset key
set yrange [0:10]
set multiplot
call 'plotter' 'data'
unset multiplot
```

$9$k$H! "5 $D$N%W%m%C%H$r9g$o$;$?1 $D$N%0%i%U$,$G$-$^$9! #yrange $O! "multiplot %b! <%I$G:G=i$N$b$N$KB3 $1$F=q$+$l$k5 $D$N%0%i%U$,! "F1$8<4$r; }$D$h$&$K! "L@<(E*$K; XD j$9$kI,MW$,$"$j$^$9! #@~<o$b; XD j$7$J$1$l $P$J$j$^$;$s! #$5$b$J$$$H! "A4$F$N%0%i%U$,F1$8@~<o$G=q$+$l$k$3$H$K$J$j$^$9! #%"%K%a! <%7%g%s$N%5%s%W%k $H$7$F! "demo %G%#%l%/%H%j$N animate.dem $b; 2>H$7$F$/$@$5$$! #

# Reset

%3%^%s%I **reset** $O! "**set** %3%^%s%I$GD j5A$G$-$k! "%0%i%U$K4X$9$kA4$F$N%*%W%7%g%s$r%G%U%)%k%H$NCM$KLa$7$^ $9! #$3$N%3%^%s%I$O! "load $7$?%3%^%s%I%U%!%$%k$r<B9T$7$?8e$G%G%U%)%k%H$N@_Dj$rI|5"$7$?$j! "@_Dj$r$?$/ $5$sJQ99$7$?8e$G85$N>uBV$KLa$7$?$$$H$-$J$I$KJXMx$G$9! #

0J2<$N$b$N$O! "**reset** $NlF6A$r<u$1$^$;$s! #

```
'set term' 'set output' 'set loadpath' 'set fontpath' 'set linetype'
'set encoding' 'set decimalsign' 'set locale' 'set psdir' 'set fit'
```

**reset** $O! "I,$:$7$b%W%m%0%i%`N)$A>e$,$C$?=i4|>uBV$K$OLa$5$J$$3$H$KCm0U$7$F$/$@$5$$! #$=$l$O! "=i4|@_ Dj%U%!%$%k gnuplotrc $d $HOME/.gnuplot Fb$N%3%^%s%I$G%G%U%)%k%H$NCM$rJQ99$7$?>l9g$O! "$=$l$b%j%;%C %H$5$l$F$7$^$&$+$i$G$9! #$7$+$7 **reset session** $H$9$l$P! "$=$l$i$N%3%^%s%I$b:F<B9T$7$^$9! #

**reset session** $O! "%f! <%6Dj5AJQ?t! "%f! <%6Dj5A4X?t$9$Y$F$r:o=|$7! "%G%U%)%k%H$N@_Dj$rI|5"$7! "%7%9%F%` A4BN$N=i4|@_Dj%U%!%$%k gnuplotrc $H8D?MMQ$N=i4|@_Dj%U%!%$%k $HOME/.gnuplot $r:F<B9T$7$^$9! #0J2<; 2 >H: **initialization (p. 47)**! #

**reset errors** $O! "%(%i! <>uBVJQ?t GPVAL_ERRNO $H GPVAL_ERRMSG $N$_$r%/%j%"$7$^$9! #

**reset bind** $O! "%-! <D j5A$r%G%U%)%k%H$N>uBV$KI|5"$7$^$9! #

# Save

=q<0:

```
save  {functions | variables | terminal | set | fit} '<filename>'
```

$I$l$b; XD j$7$J$+$C$?>l9g$O! "**gnuplot** $O! "%f! <%6Dj5A4X?t! "JQ?t! "set $G@_Dj$9$k%*%W%7%g%s! ":G8e$K<B9T $7$? **plot** ($^$?$O **splot**) %3%^%s%I$NA4$F$r$rJ]B8$7$^$9! #

**save** $O! "%F%-%9%H7A<0$G=PNO$7$^$9! #$^$?! "$3$N%U%!%$%k$O **load** %3%^%s%I$GFI$_9~$`$3$H$,$G$-$^$9! #**set** %* %W%7%g%sIU$-! "$^$?$O2 ?$b%*%W%7%g%s$r$D$1$:$K **save** $r<B9T$7$?>l9g! "**terminal** $NA*Br$H **output** $N%U%!%$ %kL>$O0%3%a%s%H5-9f$D$-$G=q$-=P$5$l$^$9! #$3$l$O$=$N=PNO%U%!%$%k$rB>$N4D6-$K%$%s%9%H! <%k$5$l$? gnuplot >e$GFI$+$9>l9g$K! "=$@5$J$7$K; H$($k$h$&$K$9$k! "$"$k$$$O$&$C$+$j%U%!%$%k$r>e=q$-$7$F$7$^$C$?$j$9$k4m 81@-$rHr$1$k! "$H$$$C$?0UL#$,$"$j$^$9! #

**save terminal** $O! "**terminal** $N>uBV$r! "%3%a%s%H5-9f$r$D$1$:$K=q$-=P$7$^$9! #$3$l$O<g$K! "$A$g$C$H$N4V $@$1 **terminal** $N@_Dj$rF~$lBX$( (! "$=$N8eJ]B8$7$F$*$$$? **terminal** $N>uBV$rFI$_9~$`$3$H$G0JA0$N terminal $N@_Dj$KLa$9>l9g$J$I$KLrN)$A$^$9! #$?$@! "C10 1$N gnuplot %;%C%7%g%s$G$O! "8=:_$N terminal $rJ]B8/I|85$9 $kB>$NJ}K!$G$"$k%3%^%s%I **set term push** $H **set term pop** $r; H$&J}$,$`$7$m$$$$$+$b$7$l$^$;$s! #0J2<; 2 >H: **set term (p. 177)**! #

**save fit** $O!"D>6a$N **fit** %3%^%s%I$G;HMQ$7$?JQ?t$N$_$rJ]B8$7$^$9!#$=$NJ]B8%U%!%$%k$O!"8e$G **via** %-!<%o!<%I$r;H$&$3$H$G fit %3%^%s%I$N=i4|2=MQ$N%Q%i%a!<%?%U%!%$%k$H$7$FMxMQ$G$-$^$9!#

%U%!%$%kL>$O0zMQId$K0O$o$l$F$$$J$1$l$P$J$j$^$;$s!#

FCJL$J%U%!%$%kL> "-" $K$h$j **save** %3%^%s%I$KI8=`=PNO$K=PNO$5$;$k$3$H$,$G$-$^$9!#popen 4X?t$r%5%]!<%H$9$k$h$&$J%7%9%F%`(Unix $J$I) $G$O!"save $N=PNO$r%Q%$%W7PM3$GB>$N30It%W%m%0%i%`$KEO$9$3$H$,$G$-$^$9!#$=$N>l9g!"%U%!%$%kL>$H$7$F%3%^%s%IL>$N@hF,$K'|' $r$D$1$?$b$N$r;H$$$^$9!#$3$l$O!"**gnuplot** $H%Q%$%W$rDL$7$FDL?.$9$k%W%m%0%i%`$K!"**gnuplot** $NFbIt@_Dj$K4X$9$k<sHx0l4S$7$?%$%s%?!<%U%'!<%9$rDs6!$7$^$9!#>\:Y$O!"0J2<;2>H: **batch/interactive (p. 24)**!#

Nc:

```
save 'work.gnu'
save functions 'func.dat'
save var 'var.dat'
save set 'options.dat'
save term 'myterm.gnu'
save '-'
save '|grep title >t.gp'
```

# Set-show

**set** %3%^%s%I$O<B$KB?$/$N%*%W%7%g%s$r@_Dj$9$k$N$K;H$o$l$^$9!#$7$+$7!"**plot**, **splot**, **replot** %3%^%s%I$,M?$($i$l$k$^$G2?$bI=<($7$^$;$s!#

**show** %3%^%s%I$O$=$l$i$N@_DjCM$rI=<($7$^$9!#**show all** $G$=$l$iA4$F$rI=<($7$^$9!#

**set** %3%^%s%I$GJQ99$5$l$?%*%W%7%g%s$O!"$=$l$KBP1~$9$k **unset** %3%^%s%I$r<B9T$9$k$3$H$G%G%U%)%k%H$N>uBV$KLa$9$3$H$,$G$-$^$9!#0J2<$b;2>H: **reset (p. 111)**!#$3$l$OA4$F$N%Q%i%a!<%?$N@_Dj$r%G%U%)%k%H$NCM$KLa$7$^$9!#

**set** $H **unset** %3%^%s%I$K$O7+$jJV$7@a$bMxMQ$G$-$^$9!#0J2<;2>H: **plot for (p. 104)**!#

## 3Q$NC10L (angles)

%G%U%)%k%H$G$O **gnuplot** $O6K:BI8%0%i%U$NFHN)JQ?t$NC10L$O%i%8%"%s$r2>Dj$7$^$9!#**set polar** $NA0$K **set angles degrees** $r;XDj$9$k$H!"$=$NC10L$OEY$K$J$j!"%G%U%)%k%H$NHO0O$O [0:360] $H$J$j$^$9!#$3$l$O%G!<%?%U%!%$%k$NIA2h$GFC$KJXMx$G$7$g$&!#3QEY$N@_Dj$O!"**set mapping** %3%^%s%I$r@_Dj$9$k$3$H$K$h$j 3 <!85$G$bM-8z$G$9!#

=q<0:

```
set angles {degrees | radians}
show angles
```

**set grid polar** $G;XDj$5$l$k3QEY$b!"**set angles** $G;XDj$7$?C10L$GFI$^$lI=<($5$l$^$9!#

**set angles** $OAH$_9~$_4X?t sin(x), cos(x), tan(x) $N0z?t$d asin(x), acos(x), atan8x), atan2(x), arg(x) $N=PNO$K$b1F6A$rM?$($^$9!#AP6J@~4X?t$d!"%Y%C%;%k4X?t$N0z?t$K$O1F6A$rM?$($^$;$s!#$7$+$7!"J#AG?t$r0z?t$H$9$k5UAP6J@~4X?t$N=PNO$K$O1F6A$,=P$^$9!#$=$l$i$N4X?t$,;H$o$l$k$H$-$O!"**set angles radians** $OF~=PNO$N0z?t$N4V$K0l4S@-$r;}$C$?4IM}$r<B8=$7$F$$$J$1$l$P$J$j$^$;$s!#

```
x={1.0,0.1}
set angles radians
y=sinh(x)
print y          #{1.16933, 0.154051} $HI=<(
print asinh(y)   #{1.0, 0.1} $HI=<(
```

$7$+$7!"

```
set angles degrees
y=sinh(x)
print y          #{1.16933, 0.154051} $HI=<(
print asinh(y)   #{57.29578, 5.729578} $HI=<(
```

0J2<$b; 2>Hpoldat.dem: **set angles** $rMQ$$$?6K:BI8IA2h$N%G%b

## Lp0u (arrow)

**set arrow** %3%^%s%I$r; H$&$3$H$K$h$j! "%0%i%U>e$NG$0U$N0LCV$KLp0u$rI=<($9$k$3$H$,$G$-$^$9! #

=q<0:

```
set arrow {<tag>} from <position> to <position>
set arrow {<tag>} from <position> rto <position>
set arrow {<tag>} from <position> length <coord> angle <ang>
set arrow <tag> arrowstyle | as <arrow_style>
set arrow <tag> {nohead | head | backhead | heads}
                {size <headlength>,<headangle>{,<backangle>}}
                {filled | empty | nofilled | noborder}
                {front | back}
                {linestyle | ls <line_style>}
                {linetype | lt <line_type>}
                {linewidth | lw <line_width>}
                {linecolor | lc <colorspec>}
                {dashtype | dt <dashtype>}

unset arrow {<tag>}
show arrow {<tag>}
```

%?%0 <tag> $O3FLp0u$r<1JL$9$k@0?t$G$9! #%?%0$r; XDj$7$J$$>l9g$O! "$=$N; ~E@$GL$; HMQ$N:G$b>.$5$$?t$,<+F0E*$K3d$jEv$F$i$l$^$9! #%?%0$r; H$&$3$H$G! "FCDj$NLp0u$rJQ99$7$?$j! ":o=|$7$?$j$G$-$^$9! #4{$KB8:_$9$k Lp0u$NB0@-$rJQ99$9$k>l9g$O! "%?%0$rL@<($7$? **set arrow** %3%^%s%I$GJQ99$2U=j$r; XDj$7$F$/$@$5$$! #

Lp0u$N:G=i$NC<E@$N0LCV$O! ">o$K "from" $G; XDj$7$^$9$,! "$b$&0l$D$NC<E@$O0J2<$G@bL@$9$k 3 $D$N0[$J$k; EAH$_$N$$$:$l$+$G; XDj$G$-$^$9! #<position> $O x,y $"$k$$$O x,y,z $G; XDj$7$^$9! #$=$7$F$=$NA0$K:BI87O$rA*Br$9$k$?$a$K **first**, **second**, **graph**, **screen**, **character** $rCV$/$3$H$,$G$-$^$9! #:BI8$r; XDj$7$J$1$l$P%G%U%)%k%H$G$O 0 $H8+$J$5$l$^$9! #>\:Y$O0J2<; 2>H: **coordinates (p. 26)**! #:G=i$NC<E@$KBP$9$k:BI8; XDj; R$O! " 2 HVL\$NC<E@$K$O1F6A$7$^$; $s! #

1) "to <position>" $O! "$b$&0l$D$NC<E@$N@dBP:BI8$r; XDj$7$^$9! #

2) "rto <position>" $O! "'from" $N0LCV$+$i$N$:$l$r; XDj$7$^$9! #$3$N>l9g! "@~7A<4 (HsBP?t<4)! "$*$h$S **graph**, **screen** :BI8$KBP$7$F$O! "; OE@$H=*E@$N5wN%$,M?$($i$l$?AjBPE*$JCM$KBP1~$7$^$9! #0lJ}! "BP?t<4$KBP$7$F$O! "M?$($i$l$?AjBPE*$JCM$O! "; OE@$+$i=*E@$X$NG\?t$KBP1~$7$^$9! #$h$C$F! "BP?t<4$N>l9g! "AjBPE*$JCM$H$7$F 0 $dI i$NCM$rM?$($k$3$H$O5v$5$l$^$;$s! #

3) "length <coordinate> angle <angle>" $O! "%0%i%UJ?LIFb$G$NLp0u$NJ}8~$r; XDj$7$^$9! #length $K$OG$0U $N:BI87O$rE,MQ$G$-$^$9! #angle $NC10L$O>o$KEY$K$J$C$F$$$^$9! #

Lp0u$NB>$NB0@-$b! "$"$i$+$8$aDj5A$7$?Lp$N%9%?%$%k$G! "$^$?$O%3%^%s%I **set arrow** $G$=$l$>$lM?$($k$3$H $,2DG=$G$9! #Lp0u$NB>$NB0@-$N>\:Y$K$D$$$F$O0J2<; 2>H: **arrowstyle (p. 170)**! #

Nc:

8 6E@$+$i (1,2) $X$NLp0u$r%f! <%6Dj5A:Q$N%i%$%s%9%?%$%k 5 $GIA$/$K$O:

```
set arrow to 1,2 ls 5
```

IA2hNN0h$N:82<3Q$+$i (-5,5,3) $X%?%0HV9f 3 $NLp0u$rIA$/$K$O:

```
set arrow 3 from graph 0,0 to -5,5,3
```

Lp0u$NC<$r 1,1,1 $KJQ99$7! "Lp@h$r30$7$FI }$r 2 $K$9$k$K$O:

```
set arrow 3 to 1,1,1 nohead lw 2
```

x=3 $N=j$X%0%i%U$N2<$+$i>e$^$G1tD>@~$rIA$/$K$O:

```
set arrow from 3, graph 0 to 3, graph 1 nohead
```

T ; z7?$NLp@h$rN>C<$K; }$D1tD>J}8~$NLp$rIA$/$K$O:

```
set arrow 3 from 0,-5 to 0,5 heads size screen 0.1,90
```

;OE@$+$i$NAjBPE*$J5wN%$r%0%i%U:BI8$GM?$($FLp$rIA$/$K$O:

```
set arrow from 0,-5 rto graph 0.1,0.1
```

x $NBP?t<4$KAjBPE*$J=*E@$r;XDj$7$FLp$rIA$/>l9g:

```
set logscale x
set arrow from 100,-5 rto 10,10
```

$3$l$O 100,-5 $+$i 1000,5 $^$G$NLp$rIA$-$^$9!#@~7A<4 (y) $KBP$7$F$OAjBPE*$J:BI8 10 $, ":9 10" $r0UL#$9 $k$N$KBP$7!"BP?t<4 (x) $KBP$7$F$OAjBPE*$J:BI8 10 $O "G\?t 10" $H$7$FF/$-$^$9!#

2 HV$NLp0u$r>C$9$K$O:

```
unset arrow 2
```

A4$F$NLp0u$r>C$9$K$O:

```
unset arrow
```

A4$F$NLp0u$N>pJs$r (%?%0$N=g$K) 8+$k$K$O:

```
show arrow
```

Lp0u$N%G%b

## <+F0=L<\ (autoscale)

<+F0=L<\5!G=(autoscale) $O x, y, z $N3F<4$KBP$7$FFHN)$K!"$^$?$O0l3g$7$F;XDj$G$-$^$9!#%G%U%)%k%H$G$OA4$F$N<4$KBP$7$F<+F0=L<\@_Dj$r9T$$$^$9!#?^$NCf$N0lIt$NIA2h (**plot**) $NAH$N$_$r8 5$K autoscale $7$?$$>l9g $O!"$=$NBP>]$G$J$$ **plot** $K%U%i%0 **noautoscale** $r$D$1$k$3$H$,$G$-$^$9!#0J2<;2>H: **datafile (p. 91)**!#

=q<0:

```
set autoscale {<axes>{|min|max|fixmin|fixmax|fix} | fix | keepfix}
set autoscale noextend
unset autoscale {<axes>}
show autoscale
```

$3$3$G!"<axes> (<4) $O **x**, **y**, **z**, **cb**, **x2**, **y2**, **xy** $N$$:$l$+$G$9!#**min** $^$?$O **max** $r<4$KDI2C;XDj$9$k$H (**xy** $G$O;H$($^$;$s$,) $=$l$O **gnuplot** $K$=$N<4$N:G>.CM!"$^$?$O:GBgCM$N$_$r<+F0=L<\$5$;$k$3$H$K$J$j$^$9!#<4$b2?$b;XDj$5$l$F$$$J$$>l9g$OA4$F$N<4$,BP>]$H$J$j$^$9!#

%G%U%)%k%H$G$O!"<+F0=L<\5!G=$O<4$NHO0O$N8B3&$r!"IA2h%G!<%?A4BN$r4^$`!":G$b6a$$L\@9$j%i%Y%k0LCV$K@_Dj$7$^$9!#%-!<%o!<%I **fixmin**, **fixmax**, **fix**, **noextend** $O!"<!$NL\@9$j0LCV$^$G$NHO0O$N<+F03HBg$r gnuplot $K9T$o$;$J$$$h$&$K$7$^$9!#$=$N>l9g<4$NHO0O$N8B3&$O!"0lHVC<$K$"$k%G!<%?E@$N:BI8CM$K4 0A4$K0lCW$7$^$9!#**set autoscale noextend** $O!"**set autscale fix** $HF1$8$G$9!#<4$NHO0O;XDj%3%^%s%I$N8e$m$K%-!<%o!<%I **noextend** $rDI2C$9$l$P!"0l$D$N<4$NHO0O$N1oD95!G=$@$1L58z$K$9$k$3$H$b$G$-$^$9!#Nc:

```
set yrange [0:*] noextend
```

**set autoscale keepfix** $O!"fix $N@_Dj$rJQ99$;$:$K;D$7$?$^$^!"$9$Y$F$N<4$r<+F0=L<\$K$7$^$9!#

<+F0=L<\5!G=$r;H$&$H$-$O!"IA2hHO0O$O<+F0E*$K3d$j=P$5$l!"=>B0JQ?t<4 (**plot** $N$H$-$O y <4!"**splot** $N$H$-$O z <4) $O!"4X?t$d%G!<%?$NCM0h$,<}$^$k$h$&$K@_Dj$5$l$^$9!#

=>B0JQ?t<4 (y $^$?$O z) $N<+F0=L<\5!G=$,;XDj$5$l$F$$$J$$>l9g$O!"8=:_$Ny $dz $NIA2hHO0O$,$=$N$^$^;H$o$l$^$9!#

FHN)JQ?t<4 (**plot** $N$H$-$O x <4!"**splot** $N$H$-$O x,y <4) $N<+F0=L<\5!G=$,;XDj$5$l$F$$$k>l9g$O!"IA2h$5$l$kA4$F$N%G!<%?%U%!%$%k$NE@$,<}$^$k$h$&$KDj5A0h$r$H$k$h$&$K$J$j$^$9!#%G!<%?%U%!%$%k$,1$D$b;XDj$5$l$F$$$J$$>l9g$O!"<+F0=L<\5!G=$O$J$s$N8z2L$b$"$j$^$;$s!#$D$^$j!"4X?t$N$_$,;XDj$5$l$F$$$F%G!<%?!<%U%!%$%k$r;H$o$J$$>l9g$O!"x <4$NIA2hHO0O (z = f(x,y) $rIA2h$7$F$$$k$H$-$O y <4$b) $O1F6A$r$&$1$^$;$s!#

HO0O$K4X$9$k$h$j>\$7$$>pJs$K4X$7$F$O!"0J2<;2>H: **set xrange (p. 186)**!#

G^2pJQ?t%b!<%I (parametric) $G$b<+F0=L<\5!G=$OM-8z$G$9 (0J2<;2>H: **set parametric (p. 157)**)!#$3$N>l9g!"$h$jB?$/$N=>B0JQ?t$,$"$k$N$G!"x, y, z 3F<4$K4X$7$F!"$h$jB?$/$N@)8f$,9T$o$l$^$9!#G^2pJQ?t%b!<%I$G$NFH

N)JQ?t (2>JQ?t) $O **plot** $G$O t $G **splot** $G$O u, v $G$9! #$=$7$FG^2pJQ?t%b! <%I$G$O! "<+F0=L<\5 !G=$O (t, u, v, x, y, z) $NA4$F$NIA2hHO0O$r@)8f$7! "x, y, z $NHO0O$N<+F0@_Dj$r40A4$K9T$$$^$9! #

L\@9$j$,Bh 2 $N<4$KI=<($5$l! "$7$+$b$3$l$i$N<4$KBP$9$kIA2h$,9T$o$l$J$+$C$?>l9g$K$O! "x2range $H y2range $O xrange $H yrange $NCM$r<u$17Q$.$^$9! #$3$l$O! "HO0O$N$:$i$7$N<B9T$d! "HO0O$r@0?t8D$NL\@9$jI }$K<+F0?-=L$9$k! VA0! W$K9T$$$^$9$N$G! ">l9g$K$h$C$FM=4 |$7$J$$7k2L$r$b$?$i$92DG=@-$,$"$j$^$9! #$3$l$rHr$1$k$N$K! "Bh 2 <4$NHO0O$rBh 1 <4$NHO0O$KL@<(E*$K% j%s%/ (link) $9$kJ}K!$,$"$j$^$9! #0J2<; 2>H: **set link (p. 144)**! #

Nc:

0J2<$O y <4$N<+F0=L<\5 !G=$r; XD j$7$^$9 (B>$N<4$K$O1F6A$rM?$ ($^$;$s):

```
set autoscale y
```

0J2<$O y <4$N:G>.CM$KBP$7$F$N$_<+F0=L<\5 !G=$r; XD j$7$^$9 (y <4$N:GBgCM! "$*$h$SB>$N<4$K$O1F6A$rM?$ ($^$;$s):

```
set autoscale ymin
```

0J2<$O x2 <4$NNY$NL\@9$j$X$N<+F0HO0O3HBg5 !G=$rL58z$K$7! "$h$C$FIA2h%G! <%?Fb! "$^$?$O4X?t$KBP$9$kCzEY$NIA2hHO0O$r0]; }$7$^$9:

```
set autoscale x2fixmin
set autoscale x2fixmax
```

0J2<$O x, y N><4$N<+F0=L<\5 !G=$r; XD j$7$^$9:

```
set autoscale xy
```

0J2<$O x, y, z, x2, y2 A4<4$N<+F0=L<\5 !G=$r; XD j$7$^$9:

```
set autoscale
```

0J2<$O x, y, z, x2, y2 A4<4$N<+F0=L<\5 !G=$r6X; _$7$^$9:

```
unset autoscale
```

0J2<$O z <4$N$_$K$D$$$F<+F0=L<\5 !G=$r6X; _$7$^$9:

```
unset autoscale z
```

### 6K: BI 8%b! <%I (polar)

6K: BI 8%b! <%I (**set polar**) $G$O! "xrange $H yrange $O<+F0=L<\%b! <%I$G$O$J$/$J$j$^$9! #F07B<4$NHO0O@)8BMQ$K **set rrange** $r; HMQ$7$?>l9g! "xrange $H yrange $O$=$l$K9g$&$h$&$K<+F0E*$KD4@0$5$l$^$9! #$7$+$7! "$5$i$K$=$l$rD4@0$7$?$1$l$P! "$=$N8e$KL@<(E*$K xrange $d yrange %3%^%s%I$r; H$&$3$H$,$G$-$^$9! #0J2<; 2>H: **set rrange (p. 168)**! #

0J2<$b; 2>H6K: BI 8$N%G%b! #

## Bind

**show bind** $O! "8=:_$N% [%C%H%-! <$N3d$jEv$F (binding) $rI=<($7$^$9! #0J2<; 2>H: **bind (p. 44)**! #

## Bmargin

%3%^%s%I **set bmargin** $O! "2<It$NM>Gr$N%5%$%:$r@_Dj$7$^$9! #>\: Y$O0J2<; 2>H: **set margin (p. 146)**! #

## %0%i%U$NOH@~ (border)

**set border** $H **unset border** $O **plot** $d **splot** $G$N%0%i%U$NOH$NI=<($r@)8f$7$^$9! #OH$OI,$:$7$b<4$H$O0lCW$7$J$$$3$H$KCm0U$7$F$/$@$5$$! #**plot** $G$OBgDq0lCW$7$^$9$,! "**splot** $G$OBgDq0lCW$7$F$$$^$;$s! #

=q<0:

```
set border {<integer>}
           {front | back | behind}
           {linestyle | ls <line_style>}
           {linetype | lt <line_type>} {linewidth | lw <line_width>}
           {linecolor | lc <colorspec>} {dashtype | dt <dashtype>}
           {polar}
unset border
show border
```

**set view 56,103** $N$h$&$KG$0U$NJ}8~$GI=<($5$1$&$k **splot** $G$O!"x-y J?LL>e$N4 $D$N3Q$O<jA0 (**front**), 8e$m (**back**) , :8 (**left**), 1& (**right**) $N$h$&$K8F$P$1$^$9!#$b$A$m$s$3$NF1$8 4 $D$N3Q$OE70f$NLL$K$b$"$j$^$9!#$h$C$F!"Nc$($P x-y J?LL>e$N8e$m$H1&$N3Q$r$D$J$06-3&$r"D1$N1&8e$m(bottom right back)" $H8@$$!"D1$HE70f$N<jA0$N3Q$r$D$J$06-3&$r "1tD><jA0 (front vertical)" $H8F$V$3$H$K$7$^$9 ($3$NL?L>K!$O!"F1<T$,2<$NI=$rM}2r$9$k$?$a$@$1$K;H$o$1$^$9)!#

OH$O!"12 %S%C%H$N@0?t$KId9f2=$5$1$F$$$^$9: 2<0L 4 %S%C%H$O **plot** $KBP$9$k3OOH!"**splot** $KBP$7$F$OD1LL$N3OOH!"<!$N4 %S%C%H$O **splot** $N1tD>$J3OOH!"$=$7$F>e0L 4 %S%C%H$O **splot** $NE70fLL$N3OOH$r@)8f$7$^$9!#$h$C$F3OOH$N@_Dj$O!"<!$NI=$NBP1~$9$k9`L\$N?t;z$NOB$K$J$j$^$9:

| %0%i%U6-3&$NId9f2= | | |
|---|---|---|
| %S%C%H | plot | splot |
| 1 | 2< | D1$N:8<jA0 |
| 2 | :8 | D1$N:88e$m |
| 4 | >e | D1$N1&<jA0 |
| 8 | 1& | D1$N1&8e$m |
| 16 | 8z2L$J$7 | 1tD>:8 |
| 32 | 8z2L$J$7 | 1tD>8e$m |
| 64 | 8z2L$J$7 | 1tD>1& |
| 128 | 8z2L$J$7 | 1tD>$N<jA0 |
| 256 | 8z2L$J$7 | E70f$N:88e$m |
| 512 | 8z2L$J$7 | E70f$N1&8e$m |
| 1024 | 8z2L$J$7 | E70f$N:8<jA0 |
| 2048 | 8z2L$J$7 | E70f$N1&<jA0 |
| 4096 | 6K:BI87O | 8z2L$J$7 |

%G%U%)%k%H$N@_DjCM$O 31 $G!"$3$l$O **plot** $G$O 4 J}8~$N3OOHA4$F!"**splot** $G$OD1LL$NOH@~A4It$H z <4$rIA$/$3$H$r0UL#$7$^$9!#

2 <!85IA2h$G$O6-3&$O$9$Y$F$NIA2hMWAG$N0lHV>e$KIA$+$l$^$9 (**front**)!#$b$76-3&$rIA2hMWAG$N2<$KIA$+$;$?$$>l9g$O!"**set border back** $H$7$F$/$@$5$$!#

3 <!851#@~=hM} (hidden3d) IA2h$G$O!"DL>o$O6-3&$r9=@.$9$k@~$bIA2hMWAG$HF1MM$K1#@~=hM}$NBP>]$K$J$j$^$9!#**set border behind** $H$9$k$H$3$N%G%U%)%k%H$N5sF0$,JQ$o$j$^$9!#

<linestyle>, <linetype>, <linewidth>, <linecolor>, <dashtype> $r;XDj$7$F!"OH@~$NIA2h$K$=$l$i$rH?1G$5$;$k$3$H$,$G$-$^$9 (8=:_$N=PNOAuCV$,%5%]!<%H$9$k$b$N$K8BDj$5$l$^$9)!#$5$i$K!"<4$N9o$_ (tics) $rIA2h$9$k: ]$b!"$=$l$i$r6-3&@~>e$GIA2h$9$k$+!"<4>e$GIA2h$9$k$+$K4X$o$i$:!"$3$N%i%$%s%9%?%$%k$r;HMQ$7$^$9!#

**plot** $G$O!"Bh 2 <4$rM-8z$K$9$k$3$H$G!"2<$H:80J30$N6-3&$KL\@9$j$rIA$/$3$H$,$G$-$^$9!#>\:Y$O!"0J2<;2>H: **xtics (p. 187)**!#

"**unset surface; set contour base**" $J$I$K$h$C$F **splot** $GD1LL$K$N$_IA2h$9$k>l9g!"1tD>@~$dE70f$O$=$l$i$,;XDj$5$l$F$$$F$bIA2h$5$l$^$;$s!#

**set grid** $N%*%W%7%g%s 'back', 'front', 'layerdefault' $G$b!"IA2h=PNO$N6-3&@~$r=q$/=gHV$r@)8f$G$-$^$9!#

%-!<%o!<%I **polar** $O!"6K:BI8%0%i%U$K1_7A$N6-3&$r$D$1$^$9!#

Nc:

0J2<$O!"%G%U%)%k%H$NOH@~$rIA$-$^$9:

```
set border
```

0J2<$O!"**plot** $G$O:8$H2<!"**splot** $G$OD1LL$N:8<jA0$H:88e$m$NOH@~$rIA$-$^$9:

```
set border 3
```

0J2<$O!"**splot** $G<~$j$K40A4$JH"$rIA$-$^$9:

```
set border 4095
```

0J2<$O!"<jA0$N1tD>LL$HE70f$N$J$$H"$rIA$-$^$9:

```
set border 127+256+512 # $^$?$O set border 1023-128
```

0J2<$O!"**plot** $KBP$7$F>e$H1&OH@~$N$_$rIA$-!"$=$1$i$r<4$H$7$FL\@9$j$E$1$7$^$9:

```
unset xtics; unset ytics; set x2tics; set y2tics; set border 12
```

## K@%0%i%UI} (boxwidth)

%3%^%s%I **set boxwidth** $O **boxes**, **boxerrorbars**, **boxplot**, **candlesticks**, **histograms** %9%?%$%k$K$*$1$k K@$N%G%U%)%k%H$NI}$r@_Dj$9$k$?$a$K;H$$$^$9!#

=q<0:

```
set boxwidth {<width>} {absolute|relative}
show boxwidth
```

%G%U%)%k%H$G$O!"NY$j9g$&K@$,@\$9$k$h$&$K3F!9$NK@$NI}$,9-$2$i$l$^$9!#$=$l$H$O0[$J$k%G%U%)%k%H$NI}$r@_Dj$9$k$K$O **set boxwidth** %3%^%s%I$r;HMQ$7$^$9!#**relative** $N>l9g$NI}$O!"%G%U%)%k%H$NI}$KBP$9$kHf$G$"$k$H2r<a$5$l$^$9!#

=$>~;R **relative** $r;XDj$7$J$+$C$?>l9g!"K@$NI} (boxwidth) $H$7$F;XDj$5$l$?L@<(E*$JCM$O!"8=:_$N x <4$NC10L$G$N?t;z (**absolute**) $G$"$k$H2r<a$5$l$^$9!#x <4$,BP?t<4 (0J2<;2>H: **set log (p. 145)**) $G$"$k>l9g!" boxwidth $NCM$O<B:]$K$O x=1 $G$N$_"@dBPE*" $H$J$j!"$=$NJ*M}E*$JD9$5$,<4A4BN$rDL$8$FJ];}$5$l$^$9($9$J$o$A!"K@$O x :BI8$NA}2C$K$H$b$J$C$F69$/$J$C$?$j$O$7$^$;$s)!#BP?t<4$N x <4$NHO0O$, x=1 $+$iN%$l$F$$$k>l9g$O!"E,@Z$JI}$r8+=P$9$K$O2?EY$+;n$7$F$_$kI,MW$,$"$k$+$bCN$l$^$;$s!#

%G%U%)%k%H$NCM$O!"**boxes** $d **boxerrorbars** %9%?%$%k$NI};XDjMQ$ND12C$N%G!<%?Ns$NL@<(E*$JCM$,$"$l$P$=$l$K$h$C$FCV$-49$($i$l$^$9!#4 Ns$N%G!<%?$N>l9g!"Bh 4 NsL\$NCM$,K@$NI}$H$7$F;H$o$l$^$9!#$?$@$7!"$=$NI}$,-2.0 $N>l9g$K$OK@$NI}$O<+F07W;;$5$l$^$9!#>\:Y$O!"0J2<;2>H: **style boxes (p. 52)**,**style boxerrorbars (p. 52)**!#

K@$NI}$r<+F0E*$K%;%C%H$9$k$K$O

```
set boxwidth
```

$H$9$k!"$"$k$$$O 4 Ns$N%G!<%?$KBP$7$F$O0J2<$N$h$&$K$7$^$9!#

```
set boxwidth -2
```

**plot** $N%-!<%o!<%I **using** $r;H$C$F$bF1$88z2L$rF@$k$3$H$,$G$-$^$9:

```
plot 'file' using 1:2:3:4:(-2)
```

K@$NI}$r<+F0E*$JCM$NH>J,$K$9$k$K$O

```
set boxwidth 0.5 relative
```

K@$NI}$r@dBPE*$JCM 2 $K$9$k$K$O

```
set boxwidth 2 absolute
```

## %+%i!<%b!<%I (color)

gnuplot $O!"2 $D$N0[$J$k@~<o72$r%5%]!<%H$7$F$$$^$9!#%G%U%)%k%H$G$O!"8D!9$N@~<o$K0[$J$k?'$r;HMQ$7$^$9$,!"$=$N?'$GE@@~$dGK@~$rIA$/$3$H$b$G$-$^$9!#$b$&0l$D$OGr9u$N@~<o$G!"E@@~/GK@~%Q%?!<%s$d@~I}$N$_$G@~<o$r6hJL$7$^$9!#%3%^%s%I **set color** $O%+%i!<$N@~<o$rA*Br$7$^$9!#0J2<;2>H:**set monochrome (p. 147)**, **set linetype (p. 143)**, **set colorsequence (p. 118)**!#

## ?'=d2sNs (colorsequence)

=q<0:

```
    set colorsequence {default|classic|podo}
```

**set colorsequence default** $O!"=PNO7A<0$K0MB8$7$J$$8 ?'$N=d2sNs$rA*Br$7$^$9!#0J2<;2>H: **set linetype (p. 143)**, **colors (p. 40)**!#

**set colorsequence classic** $O!"=PNO7A<0JL$K$=$N%I%i%$%P$,MQ0U$9$k@~?'$NNs$rA*Br$7$^$9!#?'$N<oN`$O!"4 ?'$+$i 100 ?'D6$^$GI}$,$"$j$^$9$,!"$=$NB?$/$O!"@V!"NP!"@D!";g!"?e?'!"2+?'!"$G;O$^$j$^$9!#$3$l$,0JA0$NHG$Ngnuplot $N%G%U%)%k%H$N5sF0$G$9!#

**set colorsequence podo** $O!"Wong (2011) [Nature Methods 8:441] $G?d>)$5$l$F$$$k!"P 7?!"D 7? (Protanopia, Deuteranopia) $N?'<e<T$,MF0W$K6hJL$G$-$k8 ?'$NAH$rA*Br$7$^$9!#

$$$:$l$N>l9g$G$b!"?'Ns$ND9$5$H$=$N?'$K$D$$$F$O$5$i$K%+%9%?%^%$%:$G$-$^$9!#0J2<;2>H: **set linetype (p. 143)**, **colors (p. 40)**!#

## Clabel

$3$N%3%^%s%I$OHs?d>)$G$9!#Be$o$j$K **set cntrlabel** $r;HMQ$7$F$/$@$5$$!#**unset clabel** $O **set cntrlabel onecolor** $K!"**set clabel "format"** $O **set cntrlabel format "format"** $KCV$-49$o$C$F$$$^$9!#

## %/%j%C%T%s%0 (clip)

=q<0:

```
     set clip {points|one|two}
     unset clip {points|one|two}
     show clip
```

%G%U%)%k%H$N>uBV:

```
     unset clip points
     set clip one
     unset clip two
```

%0%i%UNN0h$N6-3&Fb$KCf?4$,$"$k%G!<%?E@$O!"$=$NE@$rI=$95-9f$N%5%$%:$,$=$N5-9f$r6-3&@~$N30$K$O$_$@$7$F$7$^$&$h$&$J>l9g$G$b!"DL>o$OIA2h$7$^$9!#**set clip points** $O!"2 <!85IA2h$G$=$N$h$&$JE@$NCf?4$,%0%i%UNN0hFb$K$"$k>l9g$G$b!"$=$N$h$&$JE@$r%/%j%C%T%s%0$7$^$9($D$^$jIA2h$7$^$;$s)!#E@$NCf?4$,%0%i%UNN0h30$K$"$k$h$&$J%G!<%?E@$O!"7h$7$FIA2h$7$^$;$s!#

@~J,$K$D$$$F$O!"$=$N0lJ}$NC<E@$,IA2hHO0O (xrange $H yrange) $N30$K$"$k>l9g$O!"DL>o$=$N@~J,$OIA2h$7$^$;$s!#**set clip one** $O!"0lJ}$NC<E@$,IA2hHO0O$N30$K$"$k@~J,$NHO0OFb$NItJ,$rIA2h$9$k$h$&$K **gnuplot** $K;X<($7$^$9!#**set clip two** $O!"N>J}$NC<E@$,IA2hHO0O$N30$K$"$k@~J,$NHO0OFb$NItJ,$rIA2h$9$k$h$&$K **gnuplot** $K;X<($7$^$9!#@~J,A4BN$,IA2hHO0O30$G$"$k$h$&$J@~J,$O7h$7$FIA2h$7$^$;$s!#

Cm0U:

* **set clip** $O!"IA2h%9%?%$%k **lines**, **linespoints**, **points**, **vectors** $G@8@.$5$l$kE@!"@~J,$N$_$K1F6A$7$^$9!#

* **pm3d** $N2 <!85<Ml F$d6JLL$G;HMQ$9$k?'D9J}7A$N%/%j%C%T%s%0$O!"**set pm3d clip1in** $H **set pm3d clip4in** $G9T$$$^$9!#

* %*%V%8%'%/%H$N%/%j%C%T%s%0$O!"8D!9$N%*%V%8%'%/%H (object) $N **{clip|noclip}** B0@-$G@)8f$7$^$9!#

## Ey9b@~%i%Y%k (cntrlabel)

=q<0:

```
     set cntrlabel {format "format"} {font "font"}
     set cntrlabel {start <int>} {interval <int>}
     set contrlabel onecolor
```

**set cntrlabel** $O!"K^NcFb(%G%U%)%k%H) $+!"**splot ... with labels** $N:]$N%0%i%U>e$NEy9b@~$N%i%Y%k$r@)8f$7$^$9!#8e<T$N>l9g!"%i%Y%k$O%i%Y%k5-=RB0@-$N **pointinterval** $+ **pointnumber** $K=>$C$F3FEy9b@~$K1h$C$FG[CV$5$l$^$9!#%G%U%)%k%H$G$O%i%Y%k$OEy9b@~$r9=@.$9$k 5 HVL\$N@~J,$N>e$KCV$+$l!"20 8D$N@~J,Kh$K7+$jJV$5$l$^$9!#$3$N%G%U%)%k%H$O!"0J2<$HF1$8$G$9:

```
set cntrlabel start 5 interval 20
```

$3$l$i$NCM$O%3%^%s%I **set cntrlabel** $G!"$"$k$$$O **splot** %3%^%s%I$K4V3V$r;XDj$9$k$3$H$GJQ99$G$-$^$9:

```
set contours; splot $FOO with labels point pointinterval -1
```

4V3V$rIi$NCM$K@_Dj$9$k$H!"%i%Y%k$O3FEy9b@~$K1 $D$@$1$D$-$^$9!#$7$+$7 **set samples** $+ **set isosamples** $,Bg$-$JCM$N>l9g$OB?$/$NEy9b@~$r%i%Y%k0l$D$@$1$GIA$-$^$9!#

K^Nc (key) $K$O!"Ey9b@~%i%Y%k$r$=$1$>$1$N@~<o (linetype) $r;HMQ$7$F=q$-$^$9!#%G%U%)%k%H$G$O!"@~<o<+?H$,3FEy9b@~$N%1%Y%k$rM?$($k$N$G!"$=$1$>$1$KBP$9$kJL!9$N%i%Y%k$,8=$1$^$9!#%3%^%s%I **set cntrlabel onecolor** $O$9$Y$F$NEy9b@~$rF1$8@~<o$GIA2h$9$k$N$G!"K^Nc$K$O0l$D$N%i%Y%k$N$_$r=q$-$^$9!#$3$N%3%^%s%I$O!"8E$$%3%^%s%I **unset clabel** $rCV$-49$($k$b$N$G$9!#

## Ey9b@~@)8f (cntrparam)

**set cntrparam** $OEy9b@~$N@8@.J}K!!"$*$h$S$=$l$r3j$i$+$KIA2h$9$kJ}K!$r@)8f$7$^$9!#**show contour** $O8=:_$N **contour** $N@_Dj$@$1$G$J$/ **cntrparam** $N@_Dj$r$bI=<($7$^$9!#

=q<0:

```
set cntrparam { { linear
                | cubicspline
                | bspline
                | points <n>
                | order <n>
                | levels { auto {<n>} | <n>
                           | discrete <z1> {,<z2>{,<z3>...}}
                           | incremental <start>, <incr> {,<end>}
                         }
                  {{un}sorted}
                  {firstlinetype N}
                }
              }
show cntrparam
```

$3$N%3%^%s%I$O 2 $D$N5!G=$r;}$C$F$$$^$9!#0l$D$OEy9b@~>e$NE@$r7h$a$k$?$a$N z $NCM$N@_Dj$G$9!#Ey9b@~$N%l%Y%k$N?t <n> $O@0?t7?$ND j?t<0$G$J$1$l$P$$$1$^$;$s!#<z1>, <z2> ... $O<B?tCM$N?t<0$G$9!#$b$&0l$D$O!"8D!9$NEy9b@~$N8+$?L\$N@)8f$G$9!#

Ey9b@~$NJ?3j2=$r@)8f$9$k%-!<%o!<%I:

**linear**, **cubicspline**, **bspline** — 6a;w(Jd4V) J}K!$r;XDj$7$^$9!#**linear** $J$i$P!"Ey9b@~$O6JLL$+$iF@$i$l$?CM$r6hJ,E*$KD>@~$G7k$S$^$9!#**cubicspline** (3 <!%9%W%i%$%s) $J$i$P!"6hJ,E*$JD>@~$O$$$/$V$s$J$a$i$+$JEy9b@~$,F@$i$l$k$h$&$KJd4V$5$l$^$9$,!"B?>/GHBG$D2DG=@-$,$"$j$^$9!#**bspline** (B-spline) $O!"$h$j3j$i$+$J6J@~$rIA$/$3$H$,J]>Z$5$l$^$9$,!"$3$l$O z $NEy$7$$E@$NOlCV$r6a;w$7$F$$$k$@$1$G$9!#

**points** — :G=*E*$K$O!"A4$F$NIA2h$O!"6hJ,E*$JD>@~$G9T$o$l$^$9!#$3$3$G;XDj$9$k?t$O!"**bspline** $^$?$O **cubicspline** $G$N6a;w$K;H$o$l$k@~J,$N?t$r@)8f$7$^$9!#<B:]$K$O cubicspline $H bspline $N6h4V(6J@~@~J,)$N?t$O **points** $H@~J,$N?t$N@Q$KEy$7$/$J$j$^$9!#

**order** — bspline 6a;w$N<!?t$G$9!#$3$N<!?t$,Bg$-$/$J$k$K$D$l$F!"Ey9b@~$O$J$a$i$+$K$J$j$^$9($b$A$m$s!"9b<!$N bspline 6J@~$K$J$k$[$I!"85$N6hJ,E*D>@~$+$i$ON%$l$F$$$-$^$9)!#$3$N%*%W%7%g%s$O **bspline** %b!<%I$G$N$_M-8z$G$9!#;XDj$G$-$kCM$O!"2 (D>@~) $+$i 10 $^$G$N@0?t$G$9!#

Ey9b@~%l%Y%k$NA*Br$r@)8f$9$k%-!<%o!<%I:

**levels auto** — $3$l$,%G%U%)%k%H$G$9!#<n> $O2>$N%l%Y%k$N?t$G$"$j!"<B:]$N%l%Y%k$N?t$O!"4JC1$J%i%Y%k$r@8@.$9$k$h$&$KD4@a$5$l$^$9!#6JLL$N z :BI8$, zmin $+$i zman $NHO0O$K$"$k$H$-!"Ey9b@~$O$=$N4V$N dz

$N@0?tG\$K$J$k$h$&$K@8@.$5$l$^$9!#$3$3$G!"dz $O 10 $N$"$k$Y$->h$N 1, 2, 5 G\!"$N$$$:$l$+$G$9 (2 $D$NL\@9$j$N4V$rCzEY3d$j@Z$k$h$&$K)!#

**levels discrete** — Ey9b@~$O;XDj$5$l$?z = <z1>, <z2> ... $KBP$7$F@8@.$5$l$^$9!#;XDj$7$?8D?t$,Ey9b@~$N%l%Y%k$N8D?t$H$J$j$^$9!#**discrete** %b!<%I$G$O!"**set cntrparams levels <n>** $H$$$&;XDj$O>o$KL5;k$5$l$^$9!#

**levels incremental** — Ey9b@~$O z = <start> $+$i;O$^$j!"<increment> $:$DA}$($F9T$-8B3&$N8D?t$KC#$9$k$^$G=q$+$l$^$9!#<end> $O$=$NEy9b@~$N?t$r7hDj$9$k$N$K;H$o$l$^$9$,!"$3$l$O8e$N **set cntrparam levels <n>** $K$h$C$F>o$KJQ99$5$l$^$9!#z <4$,BP?t<4$N>l9g!"**set ztics** $N>l9g$HF1MM$K!"<increment> $O G\?t$H$7$F2r<a$5$l$^$9!#

Ey9b@~$N@~<o$N3d$jEv$F$r@)8f$9$k%-!<%o!<%I:

%G%U%)%k%H$G$O!"Ey9b@~$O;XDj$N5U=g$K@8@.$7$^$9 (**unsorted**)!#$9$o$J$A!"**set cntrparam levels increment 0, 10, 100** $O!"100 $+$i;O$^$C$F!"0 $G=*$o$k 11 K\$NEy9b@~$r:n$j$^$9!#%-!<%o!<%I **sorted** $rDI2C$9$k$H!"?tCM$NA}2CJ}8~$N=g$N@8@.$KJQ99$7!"Nc$($P:#$NNc$G$O!":G=i$K 0 $NEy9b@~$r=q$/$h$&$K$J$j$^$9!#

%G%U%)%k%H$G$O!"Ey9b@~$O!"BP1~$9$k6JLL$K;HMQ$7$?@~<o$N!"<!$+$i$N@~<oNs$GIA$-$^$9!#$9$J$o$A!"**splot x*y lt 5** $N:G=i$NEy9b@~$O@~<o 6 $G$9!#**hidden3d** %b!<%I$,M-8z$J>l9g!"3F6JLL$K$O 2 $D$N@~<o$r;H$&$N$G!"%G%U%)%k%H$N@_Dj$G$O!":G=i$NEy9b@~$H6JLL$NN"LL$NIA2h$KF1$8@~<o$r;H$C$F$7$^$$$^$9$,!"$3$l$OK>$^$7$/$"$j$^$;$s!#$3$l$rHr$1$k$K$O!"0J2<$N 2 $D$NJ}K!$,$"$j$^$9!#(1) **set hidden3d offset N** $K$h$j!"6JLL$NN"LL$N@~<o$rJQ99$9$k$3$H!#**offset -1** $H$9$k$N$,$$$$G$9$,!"$3$l$J$i$9$Y$F$NEy9b@~$N@~<o$H$V$D$+$j$^$;$s!#(2) %*%W%7%g%s **set cntrparam firstlinetype N** $K$h$j!"6JLL$G;HMQ$9$k@~<o$H$OFHN)$J!"Ey9b@~$G;HMQ$9$k@~<o7 2$r;XDj$9$k$3$H!#$3$l$O!"FC$KEy9b@~$N@~<o$r%+%9%?%^%$%:$7$?$$>l9g$K$OM-MQ$G$7$g$&!#N <= 0 $N>l9g$O%G%U%)%k%H$KLa$j$^$9!#

%3%^%s%I **set cntrparam** $r0z?tL5$7$G;HMQ$9$k$H!";XDj$7$?$9$Y$F$N%*%W%7%g%sCM$r%G%U%)%k%H$K%j%;%C%H$7$^$9!#

```
set cntrparam order 4 points 5
set cntrparam levels auto 5 unsorted
set cntrparam firstlinetype 0
```

### Cntrparam $NNc (cntrparam examples)

Nc:

```
set cntrparam bspline
set cntrparam points 7
set cntrparam order 10
```

0J2<$O%l%Y%k$N4p='$,9g$($P 5 8D$N%l%Y%k$,$K<+F0E*$KA*Br$5$l$^$9:

```
set cntrparam levels auto 5
```

0J2<$O .1, .37, .9 $K%l%Y%k$r@_Dj$7$^$9:

```
set cntrparam levels discrete .1,1/exp(1),.9
```

0J2<$O 0 $+$i 4 $^$G!"1 $:$DA}$d$9%l%Y%k$r@_Dj$7$^$9:

```
set cntrparam levels incremental  0,1,4
```

0J2<$O%l%Y%k$N?t$r 10 $K@_Dj$7$^$9 (A}2C$N:G8e$NCM (end) $^$?$O<+F0$G@_Dj$5$l$k%l%Y%k$N?t$OJQ99$5$l$^$9):

```
set cntrparam levels 10
```

0J2<$O%l%Y%k$N?t$OJ];}$7$?$^$^%l%Y%k$N3+;OCM$HA}J,CM$r@_Dj$7$^$9:

```
set cntrparam levels incremental 100,50
```

0J2<$O%+%9%?%^%$%:$7$?Ey9b@~$N@~<o7 2$rDj5A$7!";HMQ$7$^$9:

```
set linetype 100 lc "red" dt '....'
do for [L=101:199] {
    if (L%10 == 0) {
            set linetype L lc "black" dt solid lw 2
        } else {
            set linetype L lc "gray" dt solid lw 1
        }
    }
    set cntrparam firstlinetype 100
    set cntrparam sorted levels incremental 0, 1, 100
```

Ey9b@~$rIA$/>l=j$N@)8f$K4X$7$F$O!"0J2<;2>H: **set contour (p. 122)**!#Ey9b@~$N%i%Y%k$N=q<0$H@~<o$N@)8f$K4X$7$F$O!"0J2<;2>H: **set cntrlabel (p. 118)**!#

0J2<$b;2>H$7$F$/$@$5$$!#Ey9b@~$N%G%b (contours.dem)

$*$h$S%f!<%6Dj5A%l%Y%k$NEy9b@~$N%G%b (discrete.dem).

## %+%i!<%\%C%/%9 (colorbox)

?'$N0lMwI=!"$9$J$o$A **pm3d** $N **palette** $N min_z $+$i max_z $^$G$N3j$i$+$J?'$N8{G[$O!"**unset colorbox** $,;H$o$l$F$$$J$$8B$j%+%i!<%\%C%/%9(colorbox) $KIA$+$l$^$9!#

```
    set colorbox
    set colorbox {
                { vertical | horizontal } {{no}invert}
                { default | user }
                { origin x, y }
                { size x, y }
                { front | back }
                { noborder | bdefault | border [line style] }
              }
    show colorbox
    unset colorbox
```

%+%i!<%\%C%/%9$N0LCV$O!"**default** $^$?$O **user** $G;XDj$G$-!"8e<T$N>l9g$=$N0LCV$dBg$-$5$r **origin** $d **size** %3%^%s%I$G@_Dj$7$^$9!#%+%i!<%\%C%/%9$O!"%0%i%U$d6JLL$N8e (**front**) $"$k$$$O@h (**back**) $KIA2h$5$;$k$3$H$b$G$-$^$9!#

?'8{G[$NJ}8~$O!"%*%W%7%g%s **vertical** $H **horizontal** $G@ZBX$($k$3$H$,2DG=$G$9!#

**origin x, y** $H **size x, y** $O **user** %*%W%7%g%s$H$NAH$G$N$_;HMQ$5$l$^$9!#x, y $NCM$O!"%G%U%)%k%H$G$O%9%/%j!<%s:BI8$H2r<a$5$l$^$9$,!"$3$l$O3 <!85IA2hMQ$N$+$7$3$^$C$?%*%W%7%g%s$K2a$.$^$;$s!#**set view map** $K$h$k splot $r4^$'2 <!85IA2h$G$O!"G$0U$N:BI87O$G$N;XDj$,2DG=$G$9!#Nc$($P0J2<$r;n$7$F$_$F$/$@$5$$:

```
   set colorbox horiz user origin .1,.02 size .8,.04
```

$3$l$O?eJ?J}8~$N?'8{G[$r%0%i%U$N2<$NJU$j$KIA2h$7$^$9!#

**border** $O6-3&IA2h$r ON $K$7$^$9 (%G%U%)%k%H) $7!"**noborder** $O6-3&IA2h$r OFF $K$7$^$9!#**border** $N8e$m$K@5$N@0?t$rM?$($k$H!"$=$l$r6-3&$rIA2h$9$k;~$N line style $N%?%0$H$7$F;H$$$^$9!#Nc$($P:

```
   set style line 2604 linetype -1 linewidth .4
   set colorbox border 2604
```

$O line style **2604**!"$9$J$o$A: Y$$@~$N%G%U%)%k%H$N6-3&?' (-1) $G6-3&$rIA2h$7$^$9!#**bdefault** (%G%U%)%k%H) $O!"%+%i!<%\%C%/%9$N6-3&$NIA2h$K%G%U%)%k%H$N6-3&$N line style $r;H$$$^$9!#

%+%i!<%\%C%/%9$N<4$O **cb** $H8F$P$l!"DL>o$N<4$N%3%^%s%I$G@)8f$5$l$^$9!#$9$J$o$A **set/unset/show** $G **cbrange**, **[m]cbtics**, **format cb**, **grid [m]cb**, **cblabel** $J$I$,!"$=$7$FB?J, **cbdata**, **[no]cbdtics**, **[no]cbmtics** $J$I$b;H$($k$G$7$g$&!#

%Q%i%a!<%?L5$7$N **set colorbox** $O%G%U%)%k%H$N0LCV$X@ZBX$($^$9!#**unset colorbox** $O%+%i!<%\%C%/%9$N%Q%i%a!<%?$r%G%U%)%k%HCM$K%j%;%C%H$7!"$=$N>e$G%+%i!<%\%C%/%9$r OFF $K$7$^$9!#

0J2<$b;2>H: **set pm3d (p. 157)**, **set palette (p. 161)**, **x11 pm3d (p. 264)**, **set style line (p. 174)**!#

## ?'L> (colornames)

gnuplot $O8BDj$5$l$?8D?t$N?'$NL>A0$r;}$C$F$$$^$9!#$3$l$i$O!"pm3d %Q%l%C%H$G$D$J$,$l$k?'$NHO0O$rDj5A$9$k$N$K!"$"$k$$$O8D!9$N@~<o$d%i%$%s%9%?%$%k$N?'$r=PNO7A<0$KOMB8$7$J$$7A$GDj5A$7$?$j$9$k$N$K;H$($^$9!#gnuplot $N;}$D?'L>$NO1MW$r8+$k$K$O!"%3%^%s%I **show colornames** $r;HMQ$7$F$/$@$5$$!#Nc:

```
set style line 1 linecolor "sea-green"
```

## Ey9b@~ (contour)

%3%^%s%I **set contour** $O6JLL$NEy9b@~$r0z$/$3$H$r;X<($7$^$9!#$3$N%*%W%7%g%s$O **splot** $G$N$_M-8z$G$9!#$3$l$O!"3J;R>u%G!<%?(grid data) $rI,MW$H$7$^$9!#>\:Y$O!"0J2<;2>H: **grid_data (p. 199)**!#Hs3J;R>u%G!<%?$GEy9b@~$rIA$-$?$$>l9g$O!"3J;R$r@8@.$9$k$?$a$K **set dgrid3d** $r;HMQ$7$^$9!#

=q<0:

```
set contour {base | surface | both}
unset contour
show contour
```

$3$l$i$N3 $D$N%*%W%7%g%s$OEy9b@~$r$I$3$K0z$/$+$r;XDj$7$^$9!#**base** $G$OEy9b@~$r x/y <4$N9o$_$N$"$kDlLL$KIA$+$l!"**surface** $G$OEy9b@~$O$=$N6JLL<+BN$N>e$KIA$+$l!"**both** $G$ODlLL$H6JLL>e$NN>J}$KIA$+$l$^$9!#%*%W%7%g%s$,;XDj$5$l$F$$$J$$>l9g$O **base** $G$"$k$H2>Dj$5$l$^$9!#

Ey9b@~$NIA2h$K1F6A$rM?$($k%Q%i%a!<%?$K$D$$$F$O!"0J2<;2>H: **set cntrparam (p. 119)**!#Ey9b@~$N%i%Y%k$N@)8f$K4X$7$F$O!"0J2<;2>H: **set cntrlabel (p. 118)**!#

Ey9b@~$N$_$N%0%i%U$rF@$k$?$a$K!"6JLL<+?H$NIA2h$r$7$J$$$h$&$K$9$k$3$H$b$G$-$^$9 (0J2<;2>H: **unset surface (p. 176)**)!#**set size** $r;H$C$F!"%0%i%U$r2hLL0lGU$KIA2h$9$k$3$H$b2DG=$G$9$,!"$=$&$$$C$?=PNO7A<0$h$j$b!"Ey9b@~$N%G!<%?$r%G!<%?%V%m%C%/$K=q$-=P$7!"$=$l$r:F$S 2 <!85%G!<%?$H$7$FFI$_9~$s$GIA2h$9$l$P$h$j$h$$@)8f$,2DG=$K$J$j$^$9:

```
unset surface
set contour
set cntrparam ...
set table $datablock
splot ...
unset table
# Ey9b@~$N>pJs$O:# $datablock $NCf$K$"$k
set term <whatever>
plot $datablock
```

Ey9b@~$rIA$/$?$a$K$O!"%G!<%?$O3J;R>u%G!<%? ("grid data") $G$"$kI,MW$,$"$j$^$9!#$=$N$h$&$J%U%!%$%k$G$O!"0l$D$N y-8IN)@~>e$NA4$F$NE@$,=g$KJB$Y$i$l$F$$$-$^$9!#$=$7$FNY$N y-8IN)@~>e$NE@$,=g$KJB$Y$i$l!"$=$7$FNY!"$HB3$$$F$$$-$^$9!#y-8IN)@~F1;N$rJ,N%$9$k$K$O0l9T$N6u9T (6uGr!"I |5"!"2~9T0J30$NJ8;z$r4^$^$J$$9T) $r64$_$^$9!#0J2<;2>H: **splot datafile (p. 196)**!#

0J2<$b;2>H$7$F$/$@$5$$!#Ey9b@~$N%G%b (contours.dem)

$*$h$S%f!<%6Dj5A%l%Y%k$NEy9b@~$N%G%b (discrete.dem).

## E@@~/GK@~@_Dj (dashtype)

%3%^%s%I **set dashtype** $O!"E@@~/GK@~%Q%?!<%s$rHV9f$G;2>H$G$-$k$h$&$KEPO?$7$^$9!#$3$l$O$H$F$bJXMx$G!"$=$NE@@~/GK@~%Q%?!<%s$r$=$NHV9f$G<u$1$D$1$F$/$l$k>l=j$J$i$P!"$I$3$G$bL@<(E*$JE@@~/GK@~%Q%?!<%s$b<u$1$D$1$F$/$l$^$9!#Nc:

```
    set dashtype 5 (2,4,2,6)    # 5 HV$N dashtype $rDj5A$^$?$O:FDj5A
    plot f1(x) dt 5             # $=$N dashtype $r;H$C$F plot
    plot f1(x) dt (2,4,2,6)     # >e$HA4$/F1$8%0%i%U
    set linetype 5 dt 5         # $3$N%Q%?!<%s$r linetype 5 $G>o$K;H$&
    set dashtype 66 "..-"       # J8;zNs$G?7$7$$ dashtype $rDj5A
```

0J2<;2>H: **dashtype (p. 43)**!#

## Data style

$3$N%3%^%s%I$N7A<0$O8=:_$O?d>)$5$l$F$$$^$;$s!#0J2<;2>H:**set style data (p. 172)**!#

## Datafile

%3%^%s%I **set datafile** $O!"**plot**, **splot**, **fit** %3%^%s%I$GF~NO%G!<%?$rFI$`>l9g$K!"$=$NNs (field) $N2r<a$N;EJ}$r@)8f$9$k%*%W%7%g%s$r;}$A$^$9!#8=:_$O!"6 $D$N$=$N$h$&$J%*%W%7%g%s$,<BAu$5$l$F$$$^$9!#

### Set datafile fortran

%3%^%s%I **set datafile fortran** $O!"F~NO%U%!%$%k$N Fortran D 7?!"Q 7?$ND j?tCM$NFCJL$J%A%'%C%/$r2DG=$K$7$^$9!#$3$NFCJL$J%A%'%C%/$OF~NO=hM}$rCY$/$7$^$9$N$G!"<B:]$K$=$N%G!<%?%U%!%$%k$, Fortran D 7?!"Q 7?$ND j?t$r;}$C$F$$$k>l9g$K$N$_$3$l$rA*Br$9$Y$-$G$9!#$3$N%*%W%7%g%s$O!"$=$N8e$G **unset datafile fortran** $r9T$($PL58z$K$G$-$^$9!#

### Set datafile nofpe_trap

%3%^%s%I **set datafile nofpe_trap** $O!"F~NO%U%!%$%k$+$i%G!<%?$NFI$_9~$_$N:]$K!"$9$Y$F$N?t<0$NI>2A$NA0$KIbF0>.?tE@Nc30%O%s%I%i$N:F=i4|2=$r$7$J$$$h$&$K gnuplot $KL?Na$7$^$9!#$3$l$K$h$j!"$H$F$bBg$-$J%U%!%$%k$+$i$N%G!<%?$NF~NO$,$+$J$jB.$/$J$j$^$9$,!"IbF0>.?tE@Nc30$,5/$-$?>l9g$K%W%m%0%i%`$,0[>o=*N;$7$F$7$^$&4m81$O$"$j$^$9!#

### Set datafile missing

=q<0:

```
set datafile missing "<string>"
set datafile missing NaN
show datafile missing
unset datafile
```

%3%^%s%I **set datafile missing** $O!"F~NO%G!<%?%U%!%$%kCf$G7gB;%G!<%?$r5-=R$9$kFCJL$JJ8;zNs$,$"$k$3$H$r **gnuplot** $K;X<($7$^$9!#**missing** $K4X$9$k%G%U%)%k%HCM (J8;z) $O$"$j$^$;$s!#gnuplot $O!V7gB;%G!<?!W$H!VL58z$JCM!W(Nc$($P "NaN" $d 1/0) $r6hJL$7$^$9!#Nc$($P!"O"B3$9$k%G!<?E@$KBP$9$k%0%i%U$N@^$l@~IA2h$O!"L58z$JCM$K$h$C$F$=$3$G@Z$l$^$9$,!"7gB;%G!<?$N>l9g$O$=$&$G$O$"$j$^$;$s!#

?tCM$,4|BT$5$l$k>lL L$G?tCM$G$O$J$$J8;z$,8=$l$?>l9g$O!"$=$l$, **missing** $G;XD j$9$kJ8;zNs$K%^%C%A$9$k>l9g$r=|$$$F!"DL>o7gB;%G!<?$G$O$J$/!"L58z$JCM$H$7$F2r<a$7$^$9!#

5U$K!"**set datafile missing NaN** $H$9$k$H!"?t<0$d%G!<?Cf$N?tCM$G$O$J$$CM (NaN) $O$9$Y$F7gB;%G!<?$H$7$F07$$$^$9!#

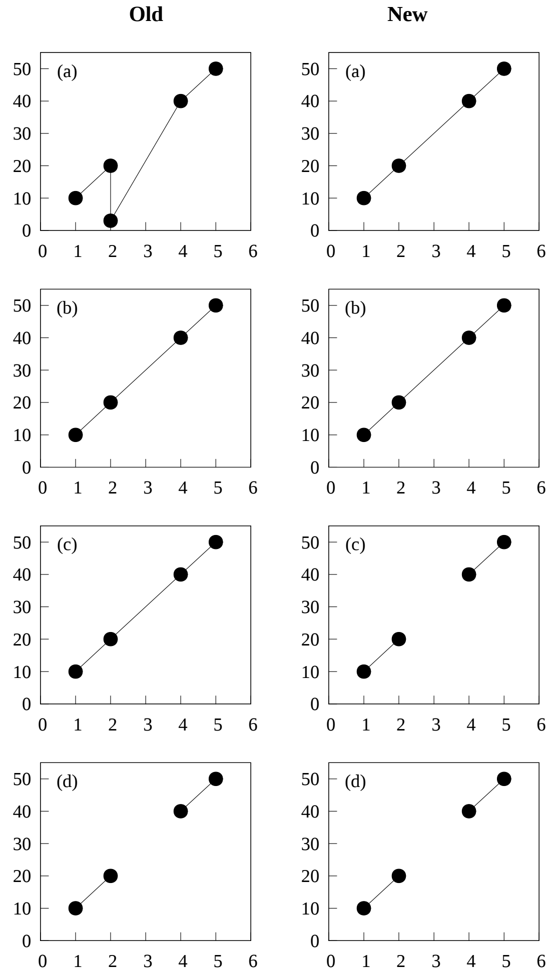
Cm0U: $"$k>l9g$N7gB;%G!<?$HL58z$JCM$N07$$$O!"8=:_$N%P!<%8%g%s$N

**gnuplot** $G$OJQ99$5$l$F$$$^$9!#0J2<$NNc$G!"**gnuplot** %P!<%8%g%s 4 $H%P!<

%8%g%s 5 $G$N0c$$$r<($7$^$9!#

Nc:

```
set style data linespoints
plot '-' title "(a)"
   1 10
   2 20
   3 ?
   4 40
   5 50
   e
set datafile missing "?"
plot '-' title "(b)"
   1 10
   2 20
   3 ?
   4 40
   5 50
   e
plot '-' using 1:2 title "(c)"
   1 10
   2 20
   3 NaN
   4 40
   5 50
   e
plot '-' using 1:($2) title "(d)"
   1 10
   2 20
   3 NaN
   4 40
   5 50
   e
```



(a) $N%0%i%U$O! "3 9TL\$K$OM-8z$JCM$,$R$H$D$7$+$J$$$?$a! "gnuplot 4 $Hgnuplot 5 $G0c$$$,$"$j$^$9! #%P! <%8%g%s 4 $G$O! "$=$3$K 1 9T$K 1 $D$7$+%G! <%?$,$J$+$C$?>l9g$N5,B'$rE,MQ$7! "9THV9f$r "x" $K! "%G! <%?$r "y" $H8+$J$7! "8m$C$F$=$NE@$r (2,3) $KIA2h$7$F$$$^$7$?! #

J8; z '?' $,7gB;%G! <%?$r0UL#$9$k$b$N$H$7$F; XD j$5$l$F$$$k (b) $G$O! "8E$$HG$N gnuplot $G$b?7$7$$HG$G$bF1$8%G! <%?$r@5$7$/=hM}$7$^$9! #

(c), (d) $N%0%i%U$K8+$i$l$k$h$&$K! "8E$$ gnuplot $G$O NaN $r using $N; XD j$N; EJ}$K$h$C$F0[$J$C$?=hM}$r$7$F$$$^$7$?! #8=:_$O! "gnuplot $OF~NONs$H$7$F N $H; XD j$5$l$F$$F$b ($N) $H; XD j$5$l$F$$F$b NaN $KBP$7$F$OF1$8=hM}$r9T$$$^$9! #0J2<$N%G%b$b; 2>H$7$F$/$@$5$$! #imageNaN %G%b! #

%P! <%8%g%s 5.0.6 ; ~E@$G! "$3$l$O7gB;CM%U%i%0$K4X$7$F$b@5$7$$$G$9! #0JA0$N%P! <%8%g%s$G$O! "plot %3%^%s%I $K **using N** $G$O$J$/ **using ($N)** $r; XD j$7$?>l9g$O! "7gB;CM%U%i%0$NG'<1$K4V0c$$$,$"$j$^$7$?! #$7$+$7! "8=:_$Ngnuplot $G$"$C$F$b! "7W; ;<0$G! V7gB;CM! W$r; HMQ$9$k$H$=$N7k2L$O NaN $H$J$j$&$k$3$H$KCm0U$7$F$/$@$5$$! #Nc$ ($P! "1 NsL\$+2 NsL\$K **missing** $NJ8; zNs$,$"$k>l9g! "**using ($1+$2)** $K$h$kI>2A$O NaN $H$J$j$^$9! #$=$N>l9g$G$b$3$l$r7gB;CM$H$7$F07$$$?$1$l$P! "%3%^%s%I **set datafile missing NaN** $r; HMQ$7$F$/$@$5$$! #

## Set datafile separator

%3%^%s%I **set datafile separator** $O! "$3$N8e$NF~NO%U% !%$%k$N%G! <%?Ns$NJ,N%J8; z$,! "6uGr (whitespace) $G$J$/$F! "$3$3$G; XD j$9$kJ8; z$G$"$k$H **gnuplot** $K; X< ($7$^$9! #$3$N%3%^%s%I$N: G$b0lHIE*$J; HMQNc$O! "I=7W; ;%=%U%H$d%G! <%?%Y! <%9%=%U%H$,:n$k csv (%3%s%^6h@Z$j) %U% !%$%k$rFI$`>l9g$G$7$g$&! #%G%U%)%k%H$N%G! <%?Ns$NJ,N%J8; z$O6uGr (whitespace) $G$9! #

=q<0:

```
set datafile separator {whitespace | tab | comma | "<chars>"}
```

Nc:

```
# %?%V6h@Z$j$N%U%!%$%k$rF~NO
set datafile separator "\t"

# %3%s%^6h@Z$j$N%U%!%$%k$rF~NO
set datafile separator comma

# F~NO%U%!%$%k$, * $+ | $N$$$:$l$+$G6h@Z$i$l$?Ns$r;}$D>l9g
set datafile separator "*|"
```

### Set datafile commentschars

%3%^%s%I **set datafile commentschars** $O!"%G!<%?%U%!%$%k$HC f$N%3%a%s%H9T$N3+;OJ8;z$H$7$F$I$NJ8;z$r;H$&$+$r;XD j$7$^$9!#;XD j$7$?J8;z$NC f$N0l$D$,%G!<%?9T$N:G=i$NHs6uGrJ8;z$H$7$F8=$o$l$?>l9g!"$=$N%G!<%?9T$N$=$l0J9_$NItJ,$rL5;k$7$^$9!#%G%U%)%k%HJ8;zNs$O!"VMS $G$O "#!"!"$=$l0J30$G$O "#" $G$9!#

=q<0:

```
set datafile commentschars {"<string>"}
show datafile commentschars
unset commentschars
```

$h$C$F!"%G!<%?%U%!%$%k$N0J2<$N9T$O4 0A4$KL5;k$5$l$^$9:

```
# 1 2 3 4
```

$,!"0J2<$N9T

```
1 # 3 4
```

$O!"2 NsL\$K%4%_$,$"$j!"$=$N8e$KM-8z$J%G!<%?$, 3 NsL\$H 4 NsL\$K$"$k$HG'<1$5$l$^$9!#

Nc:

```
set datafile commentschars "#!%"
```

### Set datafile binary

%3%^%s%I **set datafile binary** $O!"%G!<%?%U%!%$%k$NFI$_9~$_;~$K%P%$%J%j%U%!%$%k$r%G%U%)%k%H$H@_Dj$9$k$N$K;H$o$l$^$9!#=q<0$O!"$=$l$, **plot** $^$?$O **splot** %3%^%s%I$G;H$o$l$k$N$H@53N$KF1$8$G$9!#<binary list> $K=q$1$k%-!<%o!<%I$K4X$7$F$O!">\$7$/$O!"0J2<;2>H: **binary matrix (p. 196)**,**binary general (p. 87)**!#

=q<0:

```
set datafile binary <binary list>
show datafile binary
show datafile
unset datafile
```

Nc:

```
set datafile binary filetype=auto
set datafile binary array=(512,512) format="%uchar"

show datafile binary   # 8=:_$N@_Dj$N0lMwI=<(
```

## >.?tE@@_Dj (desimalsign)

%3%^%s%I **set decimalsign** $O!"L\@9$j$N8+=P$7!"$"$k$$$O **set label** J8;zNs$K=q$+$l$k?t$N>.?tE@5-9f$rA*Br$7$^$9!#

=q<0:

```
set decimalsign {<value> | locale {"<locale>"}}
unset decimalsign
show decimalsign
```

0z?t <value> $O!"DL>o$N>.?tE@5-9f$KCV$-49$($F;H$&J8;zNs$G$9!#E57?E*$J$b$N$O%T%j%*%I '.' $d%3%s%^ ',' $G$9$,B>$K$bM-MQ$J$b$N$,$"$k$G$7$g$&!#0z?t <value> $r>JN,$9$k$H!">.?tE@$N6h@Z$j$O%G%U%)%k%H(%T%j%*%I) $+$iJQ99$5$l$^$;$s!#unset decimalsign $b <value> $r>JN,$9$k$N$HF1$88z2L$r;}$A$^$9!#

Nc:

B?$/$N%h!<%m%C%Q=t9q$G$N@5$7$$=PNO7A<0$rF@$k$K$O:

```
set decimalsign ','
```

<!$N$3$H$KCm0U$7$F$/$@$5$$: L@<(E*$JJ8;zNs$r@_Dj$7$?>l9g!"$3$l$O<4$NL\@9$j$J$I$Ngnuplot $Ngprintf() =q<04X?t$G=PNO$5$l$k?tCM$N$_$Kl F6A$7!"F~NO%G!<%?$N=q<0;XDj$dsprintf() =q<04X?t$G=PNO$5$l$k?tCM$K$Ol F6A$7$^$;$s!#$=$l$i$NF~NO$d=PNO$N7A<0$N5sF0$bJQ99$7$?$$>l9g$O!"Be$o$j$K0J2<$r;HMQ$7$F$/$@$5$$:

```
set decimalsign locale
```

$3$l$O!"gnuplot $K!"F~NO$H=PNO$N=q<0$r!"4D6-JQ?t LC_ALL, LC_NUMERIC, LANG $N8=:_$N@_Dj$K=>$C$?$b$N$r;H$o$;$k$h$&$K$7$^$9!#

```
set decimalsign locale "foo"
```

$3$l$O!"gnuplot $K!"F~NO$H=PNO$N=q<0$r!"%m%1!<%k "foo" $K=>$C$?$b$N$K$7$^$9$,!"$=$N%m%1!<%k$,%$%s%9%H!<%k$5$l$F$$$kI,MW$,$"$j$^$9!#$b$7%m%1!<%k "foo" $,8+$D$+$i$J$+$C$?>l9g!"%(%i!<%a%C%;!<%8$,=PNO$5$l!">.?tE@$N@_Dj$OJQ99$5$l$^$;$s!#linux %7%9%F%`>e$G$O!"$=$3$K%$%s%9%H!<%k$5$l$F$$$k%m%1!<%k$N0lMw $O "locale -a" $G8+$k$3$H$,$G$-$^$9!#linux $N%m%1!<%kJ8;zNs$O$@$$$?$$ "sl_SI.UTF-8" $N$h$&$J7A<0$r$7$F$$$^$9$,!"Windows $N%m%1!<%kJ8;zNs$O "Slovenian_Slovenia.1250" !"$^$?$O "slovenian" $N$h$&$J7A<0$G$9!#%m%1!<%kJ8;zNs$N2r<a$O!"C $N%i%s%?%$%`%i%$%V%i%j$,9T$&$3$H$KCm0U$7$F$/$@$5$$!#8E$$ C %i%$%V%i%j$G$O!"%m%1!<%k@_Dj$N%5%]!<%H(Nc$($P?t;z$N 3 7eKh$N6h@Z$jJ8;z$J$I) $rItJ,E*$K$7$+Ds6!$7$F$$$J$$$+$b$7$l$^$;$s!#

```
set decimalsign locale; set decimalsign "."
```

$3$l$O!"8=:_$N%m%1!<%k$K9g$C$?$I$s$J>.?tE@$G$b!"A4$F$NF~=PNO$KBP$7$F;HMQ$9$k$h$&$K@_Dj$7$^$9$,!"gnuplot $NFbIt4X?t gprintf() $r;H$C$F=q<02=$9$k?tCM$OL@<(E*$K;XDj$5$l$?'.' $K$J$j$^$9 (>e=q$-)!#

### 3J;R>u%G!<%?=hM} (dgrid3d)

%3%^%s%I **set dgrid3d** $O!"Hs3J;R>u%G!<%?$+$i3J;R>u%G!<%?$X$N<IA|5!G=$rM-8z$K$7!"$=$N$?$a$N%Q%i%a!<%?$r@_Dj$7$^$9!#3J;R>u%G!<%?$N9=B$$K$D$$$F$N>\:Y$O!"0J2<;2>H: **splot grid_data (p. 199)**!#

=q<0:

```
set dgrid3d {<rows>} {,{<cols>}}
            { splines |
              qnorm {<norm>} |
              (gauss | cauchy | exp | box | hann)
                {kdensity} {<dx>} {,<dy>} }
unset dgrid3d
show dgrid3d
```

%G%U%)%k%H$G$O **dgrid3d** $OL58z$K$J$C$F$$$^$9!#M-8z$K$J$k$H!"%U%!%$%k$+$iFI$_9~$^$l$k 3 <!85$N%G!<%?$O!V;6:_$7$?!W%G!<%? (Hs3J;R>u%G!<%?) $G$"$k$H8+$J$5$l$^$9!#3J;R$O!"%0%i%U$HEy9b@~$NIA2h$N$?$a$K!";6:_$7$?%G!<%?$r0O$`6k7A$+$iF@$i$l$k@#K!$H!"row_size/col_size $G;XDj$5$l$k?t$N9T$HNs$r;}$D$h$&$K@8@.$5$l$^$9!#3J;R$O x J}8~(9T) $H y J}8~(Ns) $KEy4V3V$G$9!#z $NCM$O;6:_$9$k%G!<%?$Nz $NCM$N=E$_IU$-$NJ?6Q!"$^$?$O%9%W%i%$%sJd4V$H$7$F7W;;$5$l$^$9!#8@$$JQ$($l$P!"5,B'E*$J4V3V$N3J;R$,@8@.$5$l!"A4$F$N3J;R E@$G85$N%G!<%?$N3j$+$J6a;wCM$,I>2A$5$l$^$9!#85$N%G!<%?$NBe$o$j$K$3$N6a;wCM$,IA2h$5$l$^$9!#

%G%U%)%k%H$NNs$N?t$O9T$N?t$KEy$7$/!"$=$N%G%U%)%k%H$NCM$O 10 $G$9!#

8 5$N%G! <%?$+$i6a;wCM$r7W;;$9$k$?$a$N$$/$D$+$N%"%k%4%j%:%`$,MQ0U$5$l$F$$$F! "D12C$N%Q%i%a! <%?$r;XDj$G$-$k$b$N$b$"$j$^$9! #$3$l$i$NJd4V$O! "3J;RE@$K6a$$%G! <%?E@$[$I! "$=$N3J;RE@$KBP$7$F$h$j6/$$1F6A$rM?$($^$9! #

**splines** %"%k%4%j%:%`$O! "'Gv$$$D$.HD" $r8 5$K$7$?Jd4V7W;;$r9T$$$^$9! #$3$l$OD12C%Q%i%a! <%?$r<h$j$^$;$s! #

**qnorm** %"%k%4%j%:%`$O3F3J;RE@$GF~NO%G! <%?$N=E$_IU$-J?6Q$r7W;;$7$^$9! #3FE@$O3J;RE@$+$i$N5wN%$N norm >h$N5U?t$G=E$_IU$1$5$l$^$9! #(<B:]$K$O! "dx, dy $r3F%G! <%?E@$H3J;RE@$H$N:9$N@.J,$G$"$k$H$9$k$H! "=E$_$O dx^norm + dy^norm $GM?$($i$l$^$9! #2 $N$Y$-$N%N%k%`! "FC$K 4, 8, 16 $K4X$7$F$O! "$=$N=E$_$N7W;;$O%f! <%/%j%C%I5wN%$r;H$&$3$H$G (dx^2+dy^2)^norm/2 $N$h$&$K:GE,2=$5$l$F$^$9$,! "G$0U$NIi$G$J$$@0?t$r;H$&$3$H$b2DG=$G$9! #) %N%k%`$N$Y$-$NCM$r$?$@0 1$D$ND12C%Q%i%a! <%?$H$7$F;XDj$G$-$^$9! #$3$N%"%k%4%j%:%`$,%G%U%)%k%H$K$J$C$F$$$^$9! #

:G8e$K! "=E$_IU$-J?6Q$N7W;;MQ$K! "$$$/$D$+$NJ?3j2==E$_IU$14X?t (kernel) $,MQ0U$5$l$F$$$^$9: z = Sum_i w(d_i) * z_i / Sum_i w(d_i), $3$3$G z_i $O i HVL\$N%G! <%?NCM$G! "d_i $O8=:_$N3J;RE@$H i HVL\$N%G! <%?E@$N0LCV$H$N5wN%$G$9! #$9$Y$F$N=E$_IU$14X?t$,! "8=:_$N3J;RE@$K6a$$J}$N%G! <%?E@$K$OBg$-$J=E$_! "1s$$J}$N%G! <%?E@$K$O>.$5$$=E$_$rIU$1$^$9! #

0J2<$N=E$_IU$14X?t$,;HMQ$G$-$^$9:

```
gauss :     w(d) = exp(-d*d)
cauchy :    w(d) = 1/(1 + d*d)
exp :       w(d) = exp(-d)
box :       w(d) = 1                   d<1 $N>19g
                 = 0                   $=$NB>
hann :      w(d) = 0.5*(1-cos(2*pi*d))  d<1 $N>19g
            w(d) = 0                   $=$NB>
```

$3$l$i 5 $D$NJ?3j2==E$_IU$14X?t$N$&$A0 1$D$r;HMQ$9$k>19g! "2 $D$^$G$ND12C%Q%i%a! <%? dx $H dy $r;XDj$G$-$^$9! #$3$l$i$O! "5wN%$N7W;;;~$K:BI8$N0c$$$r%9%1! <%kJQ49$9$k$N$K;H$($^$9: d_i = sqrt( ((x-x_i)/dx)**2 + ((y-y_i)/dy)**2 ), $3$3$G! "x,y $O8=:_$N3J;RE@$N:BI8$G! "x_i,y_i $O i HVL\$N%G! <%?E@$N:BI8$G$9! #dy $N%G%U%)%k%H$NCM$O dx $G! "$=$N%G%U%)%k%H$NCM$O 1 $K$J$C$F$$$^$9! #%Q%i%a! <%? dx $H dy $O! "%G! <%?E@$,3J;RE@$X!V%G! <%?$=$l<+?H$NC10L$G!W$N4sM?$r9T$&HO0O$N@)8f$r2DG=$K$7$^$9! #

%*%W%7%g%s$-! <%o! <%I **kdensity** $O! "=E$_IU$14X?tL>$N8e$m$G (%*%W%7%g%s$N) %9%1! <%kJQ49$N%Q%i%a! <%?NA0$KCV$/$b$N$G! "$3$l$O%"%k%4%j%:%`$rJQ99$7$F! "3J;RE@MQ$K7W;;$9$kCM$r=E$_$NOB ( z = Sum_i w(d_i) * z_i ) $G$O3d$i$J$$$h$&$K$7$^$9! #z_i $,$9$Y$FDj?t$N>19g! "$3$l$O;v<B>e 2 JQ?t$N=E$_IU$1I>2A$rIA2h$7$^$9: (>e$N 5 $D$N$&$A$N0 1$D$N) =E$_IU$14X?t$,3F%G! <%?E@$KCV$+$1! "$=$1$i$N=E$_$NOB$,$9$Y$F$N3J;RE@$GI>2A$5$1! "$=$7$F8 5$N%G! <%?$NBe$o$j$K$3$N3j$i$+$J6JLL$,IA2h$5$1$^$9! #$3$l$O! "1 <!8 5$N%G! <%?=89g$KBP$9$k **smooth kdensity** %*%W%7%g%s$,9T$&$3$H$H$*$*$^$+$K$OF1$8$G$9(;HMQNc$O kdensity2d.dem $r;2>H$7$F$/$@$5$$)! #

8eJ}8_49@-$N$?$a$K! "$o$:$+$K0[$J$k=q<0$b%5%]! <%H$5$l$F$$$^$9! #$I$N%"%k%4%j%:%`$bL@<(E*$KA*Br$7$J$+$C$?>19g! "**qnorm** %"%k%4%j%:%`$,2>Dj$5$1! "3 $D0J2<$N! "%3%s%^ (,) 6h@Z$j$N%*%W%7%g%s%Q%i%a! <%?$r;XDj$7$?>19g$O! "$=$1$i$r$=$1$>19T?t! "Ns?t! "$=$7$F norm CM$G$"$k$H2r<a$7$^$9! #

%*%W%7%g%s **dgrid3d** $O! ";6:_$9$k%G! <%?$r=E$_IU$-J?6Q$G5,B'E*$J3J;R$KCV$-JQ$($kC1=c$J;EAH$_$K2a$.$^$;$s! #$3$NLdBj$KBP$9$k$h$j@vN}$5$1$?<jK!$,B8:_$7$^$9$N$G! "$3$NC1=c$JJ}K!$,IT==J,$G$"$1$P! "**gnuplot** $N3 0$G$=$N$h$&$JJ}K!$G%G! <%?$rA0=hM}$9$k$Y$-$G$7$g$&! #

0J2<$b;2>H: `dgrid3d.dem: dgrid3d $N%G%b`

$*$h$S `scatter.dem: dgrid3d $N%G%b`

## 2>JQ?t (dummy)

%3%^%s%I **set dummy** $O%G%U%)%k%H$N2>JQ?tL>$rJQ99$7$^$9! #

=q<0:

```
set dummy {<dummy-var>} {,<dummy-var>}
show dummy
```

%G%U%)%k%H$G$O! "**gnuplot** $O **plot** $G$O! "G^2pJQ?t%b! <%I! "$"$k$$$O6K:BI8%b! <%I$G$O "t", $=$&$G$J$1$1$P "x" $rFHN)JQ?t (2>JQ?t) $H$7! "F1MM$K **splot** $G$O! "G^2pJQ?t%b! <%I$G$O (**splot** $O6K:BI8%b! <%I$G$O;H$($^$;$s) "u" $H "v", $=$&$G$J$1$1$P "x" $H "y" $rFHN)JQ?t$H$7$^$9! #

2>JQ?t$O!"J*M}E*$K0UL#$N$"$kL>A0!"$"$k$$$O$h$jJXMx$JL>A0$H$7$F;H$&J}$,JXMx$G$7$g$&!#Nc$($P!";~4V$N
4X?t$rIA2h$9$k>l9g:

```
set dummy t
plot sin(t), cos(t)
```

Nc:

```
set dummy u,v
set dummy ,s
```

BhFs$NNc$O!"2 HVL\$NJQ?t$r s $H$7$^$9!#2>JQ?tL>$r%G%U%)%k%H$NCM$KLa$9$K$O0J2<$N$h$&$K$7$F$/$@$5$$!#

```
unset dummy
```

## J8;z%(%s%3!<%I (encoding)

%3%^%s%I **set encoding** $OJ8;z$N%(%s%3!<%I (encoding) $rA*Br$7$^$9!#

=q<0:

```
set encoding {<value>}
set encoding locale
show encoding
```

M-8z$JCM (value) $O0J2<$NDL$j$G$9!#

`default` - =PNO7A<0$K%G%U%)%k%H$N%(%s%3!<%I$N;HMQ$rL?Na
`iso_8859_1` - UTF-8 $h$j:G$b0lHIE*$J@>%h!<%m%C%Q%(%s%3!<%I!#$3$N%(%s%3!<%I$O PostScript $N@$3&$G$N 'ISO-Latin1' $G$9!#
`iso_8859_15` - %f!<%m5-9f$r4^$` iso_8859_1 $N0!<o
`iso_8859_2` - Cf1{/E1%h!<%m%C%Q$G;HMQ$5$l$k%(%s%3!<%I
`iso_8859_9` - (Latin5 $H$7$FCN$i$l$k) %H%k%3$G;HMQ$5$l$k%(%s%3!<%I
`koi8r` - NI$/;H$o$l$k Unix $N%-%j%kJ8;z%(%s%3!<%I
`koi8u` - Unix $N%&%/%i%$%JCOJ}$N%-%j%kJ8;z%(%s%3!<%I
`cp437` - MS-DOS $N%3!<%I%Z!<%8
`cp850` - @>%h!<%m%C%Q$N OS/2 $N%3!<%I%Z!<%8
`cp852` - Cf1{/E1%h!<%m%C%Q$N OS/2 $N%3!<%I%Z!<%8
`cp950` - MS HG$N Big5 (emf terminal $N$_)
`cp1250` - Cf1{/E1%h!<%m%C%Q$N MS Windows $N%3!<%I%Z!<%8
`cp1251` - %m%7%"!"%;%k%S%"!"%V%k%,%j%"!"%^%1%I%K%"8l (8 %S%C%H)
`cp1252` - @>%h!<%m%C%Q$N MS Windows $N%3!<%I%Z!<%8
`cp1254` - %H%k%3$N MS Windows $N%3!<%I%Z!<%8 (Latin5 $N3HD%)
`sjis` - Shift_JIS F|K\8l%(%s%3!<%I
`utf8` - 3FJ8;z$N Unicode %(%s%H%j%]%$%s%H$N!"2DJQD9 (%^%k%A%P%$%H) I=8=

%3%^%s%I **set encoding locale** $O!"B>$N%*%W%7%g%s$H$O0c$$!"$3$l$O8=:_$N%m%+!<%k$r<B9T;~$N4D6-$+$i7hDj$7$h$&$H$7$^$9!#$?$$$F$$$N%7%9%F%`$G$O$3$l$O4D6-JQ?t LC_ALL, LC_CTYPE, LANG $N$$$:$l$+$K$h$C$F@)8f$5$l$^$9!#$3$N;EAH$_$O!"Nc$($P wxt, cairopdf =PNO7A<0$G!"UTF-8 $d EUC-JP $N$h$&$J%^%k%A%P%$%HJ8;z%(%s%3!<%I$rDL$9$?$a$KI,MW$G$9!#$3$N%3%^%s%I$OF|IU$d?t;z$J$I$N%m%+!<%kFCM-$NI=8=$K$O1F6A$rM?$($^$;$s!#0J2<$b;2>H: **set locale (p. 145)**, **set decimalsign (p. 125)**!#

0lHL$K%(%s%3!<%I$N@_Dj$O!"$=$l$,E,@Z$J%U%)%s%H$NA*Br$K1F6A$rM?$($k$h$&$K!"=PNO7A<0$N@_Dj$NA0$K9T$J$&I,MW$,$"$j$^$9!#

## 8m:9@~$NC< (errorbars)

%3%^%s%I **set errorbars** $O!"8m:9%0%i%U (errorbar) $NN>C<!"$*$h$S boxplot $K$D$/H"$R$2$NN>C<$N%^!<%/$r@)8f$7$^$9!#

=q<0:

```
set errorbars {small | large | fullwidth | <size>} {front | back}
              {line-properties}
unset errorbars
show errorbars
```

**small** $O 0.0 (8r: 9@~$J$7)!"**large** $O 1.0 $HF1$8$G$9! #%5%$% :$r; XD j$7$J$1$l$P%G%U%)%k%H$NCM$O 1.0 $G$9! #

%-!<%o!<%I **fullwidth** $O! "errorbar $rH<$& boxplot $H histograms $K$N$_4XO"$7$^$9! #$3$1$O errorbar $NN>C<$NI}$r! "BP1~$9$kH"$NI}$HF1$8$K@_Dj$7$^$9$,! "H"$NI}<+BN$rJQ9 9$9$k$3$H$O$"$j$^$;$s! #

%-!<%o!<%I **front**, **back** $O! "EI$jDY$7D9J}7A$N$D$$$? errorbar $N$_$K4XO"$7$^$9 (boxes, candlesticks, histograms)! #

8m: 9@~ (errorbar) $O! "%G%U%)%k%H$G$O4XO"$9$kH"$N6-3&@~$HF1$8@~B0@-$GIA2h$7$^$9$,! "$3$1$r8m: 9@~MQ$KMQ 0U$7$?@~B0@-$KJQ9 9$G$-$^$9! #

```
set errorbars linecolor black linewidth 0.5 dashtype '.'
```

## Hs@~7A4X?t2s5" (fit)

%3%^%s%I **set fit** $O! "**fit** %3%^%s%IMQ$N%*%W%7%g%s$r@)8f$7$^$9! #

=q<0:

```
set fit {nolog | logfile {"<filename>"|default}}
        {{no}quiet|results|brief|verbose}
        {{no}errorvariables}
        {{no}covariancevariables}
        {{no}errorscaling}
        {{no}prescale}
        {maxiter <value>|default}
        {limit <epsilon>|default}
        {limit_abs <epsilon_abs>}
        {start-lambda <value>|default}
        {lambda-factor <value>|default}
        {script {"<command>"|default}}
        {v4 | v5}
unset fit
show fit
```

%*%W%7%g%s **logfile** $O! "**fit** %3%^%s%I$,$=$N=PNO$r=q$-=P$9>l=j$rDj5A$7$^$9! # 0z?t <filename> $O! "C10l0z MQId$+Fs=E0zMQId$G0O$ 'I,MW$,$"$j$^$9! #%U% !%$%kL>$r; XD j$7$J$+$C$?>l9g! "$^$?$O **unset fit** $r; HMQ$7$?>l 9g$O! "%m%0%U% !%$%k$O%G%U%)%k%H$NCM$G$"$k "fit.log" ! "$^$?$O4D6-JQ?t **FIT_LOG** $NCM$K% j%;%C%H$5$l$^$9! # M?$ ($i$l$?%m%0%U% !%$%kL>$, / $+ \ $G=*$C$F$$$k>l9g! "$=$l$O%G% #%l%/%H% jL>$H2r<a$5$l! "%m%0%U% !%$%k$O$= $N%G% #%l%/%H% j$N "fit.log" $H$J$j$^$9! #

%G%U%)%k%H$G$O! "$=$N%m%0%U% !%$%k$K=q$+$l$k>pJs$O! "BPOC7 ?=PNO$K$b=PNO$7$^$9! #**set fit quiet** $O$=$NBPOC 7 ?=PNO$r%*%U$K$7! "**results** $O: G=*7k2L$N$_$r=PNO$7$^$9! #**brief** $O! "D I2C$G fit $N$9$Y$F$N7+$jJV$7$K4X$7$F 1 9T$NMWLs$rDs6!$7$^$9! #**verbose** $O! "%P! <%8%g%s 5 0JA0$G%G%U%)%k%H$@$C$?! ">\: Y$J7+$jJV$7$NJs9p$r9T$$ $^$9! #

%*%W%7%g%s **errorvariables** $r ON $K$9$k$H! "**fit** %3%^%s%I$G7W; ;$5$l$?8D! 9$NEv$F$O$a%Q%i%a! <%?$N8m: 9$,! " $=$N%Q%i%a! <%?$NL>A0$K "_err" $r$D$1$?L>A0$N%f! <%6Dj5AJQ?t$K%3%T! <$5$l$^$9! #$3$1$O<g$K! "Ev$F$O$a4X?t $H%G! <%?$NIA2h%0%i%U$N>e$K%Q%i%a! <%?$H$=$N8m: 9$r; 2>HMQ$K=PNO$9$k$N$K; H$o$1$^$9! #Nc:

```
set fit errorvariables
fit f(x) 'datafile' using 1:2 via a, b
print "error of a is:", a_err
set label 1 sprintf("a=%6.2f +/- %6.2f", a, a_err)
plot 'datafile' using 1:2, f(x)
```

%*%W%7%g%s **errorscaling** $r; XD j$9$k$H (%G%U%)%k%H)! "%Q%i%a! <%?$N7W; ;8m: 9$rJd@5&V<+>h (reduced &V-square) $G?-=L$7$^$9! #$3$1$O! "7k2L$H$7$FJd@5&V<+>hCM$K$J$k! "Ev$F$O$a7W; ;$NI8=`JP: 9 (FIT_STDFIT) $KEy$7$$

%G!<%?8m:9$rDs6!$9$k$3$H$HF1Ey$K$J$j$^$9!#%*%W%7%g%s **noerrorscaling** $G$O!"I>2A8m:9$O!"?-=L$5$l$J$$Ev$F$O$a%Q%i%a!<%?$NI8=`JP:9$K$J$j$^$9!#%G!<%?$N=E$_$r;XDj$7$J$1$l$P!"%Q%i%a!<%?$N8m:9$O>o$K?-=L$5$l$^$9!#

%*%W%7%g%s **prescale** $r%*%s$K$9$k$H!"Marquardt-Levenberg %k!<%A%s$KEO$9A0$K!"3F%Q%i%a!<%?$NCM$r$=$l$i$N=i4|CM$K=>$C$F;vA0$K%9%1!<%kJQ49$7$^$9!#$3$l$O!"3F%Q%i%a!<%?$NBg$-$5$K$+$J$jBg$-$J0c$$$,$"$k>l9g$K!"BgJQM-8z$G$9!#$?$@$7!"=i4|CM$,40A4$K 0 $NEv$F$O$a%Q%i%a!<%?$K$O!"7h$7$F$3$N%9%1!<%kJQ49$O9T$$$^$;$s!#

H?I|?t$N8B3&CM$O!"%*%W%7%g%s **maxiter** $G@)8B$G$-$^$9!#$=$l$r 0 $+**default** $H$9$k$H!"$=$l$O8B3&$,$J$$$3$H$r0UL#$7$^$9!#

%*%W%7%g%s **limit** $O!"<}B+$r8!=P$9$k$?$a$N$b$C$H$b>.$5$$?t;z$N8B3& (1e-5) $N%G%U%)%k%H$NCM$rJQ99$9$k$N$K;H$($^$9!#<+>h;D:9$NOB$,$3$N?tCML$K~$NHfN($NJQ2=$7$+$7$J$$>l9g$O!"Ev$F$O$a$O!V<}B+$7$?!W$HH=CG$5$l$^$9!#

%*%W%7%g%s **limit_abs** $O!"<+>h;D:9$NOB$NJQ2=$N8B3& (@dBPCM) $rDI2C$7$^$9!#%G%U%)%k%H$O 0 $G$9!#

%"%k%4%j%:%`$K4X$9$kJL$N@)8f$r$7$?$$>l9g!"$=$7$F Marquardt-Levenberg %"%k%4%j%:%`$rNI$/CN$C$F$$$k>l9g!"$=$l$K1F6A$rM?$($k0J2<$N%*%W%7%g%s$,MxMQ$G$-$^$9: **lambda** $N=i4|CM$O!"DL>o<+F0E*$K ML-9TNs$+$i7W;;$5$l$^$9$,!"I,MW$J$i$P%*%W%7%g%s **start_lambda** $r;H$C$F$=$l$rM?$($k$3$H$,$G$-$^$9!#$=$l$r **default** $H$9$k$H!":F$S<+F0@_Dj$,M-8z$K$J$j$^$9!#%*%W%7%g%s **lambda_factor** $O!"BP>]$H$9$k4X?t$N&V<+>hCM$,0UL#$"$j$2$KA}2C$9$k/8:>/$9$k$H$-$O>o$K **lambda** $rA}2C$5$;$k/8:>/$5$;$k0x;R$r@_Dj$7$^$9!#$=$l$r **default** $H$9$k$H!"%G%U%)%k%H$N0x;R$G$"$k 10.0 $K$7$^$9!#

%*%W%7%g%s **script** $O!"fit $rCfCG$7$?$H$-$K<B9T$9$k **gnuplot** %3%^%s%I$r;XDj$9$k$b$N$G$9!#0J2<;2>H: **fit (p. 75)**!#$3$N@_Dj$O%G%U%)%k%H$N **replot** $d4D6-JQ?t **FIT_SCRIPT** $h$j$bM%@h=g0L$O>e$G$9!#

%*%W%7%g%s **covariancevariables** $r%*%s$K$9$k$H!":G=*E*$J%Q%i%a!<%?4V$N6&J,;6$r%f!<%6Dj5AJQ?t$KJ]B8$7$^$9!#3F%Q%i%a!<%?$NAH$KBP$7$F$=$N6&J,;6$rJ]B8$9$kJQ?tL>$O!""FIT_COV_" $K:G=i$N%Q%i%a!<%?L>$H "_" $H 2 $DL\$N%Q%i%a!<%?$r$D$J$2$?L>A0$K$J$j$^$9!#Nc$($P%Q%i%a!<%? "a" $H "b" $KBP$7$F$O!"$=$N6&J,;6JQ?tL>$O "FIT_COV_a_b" $H$J$j$^$9!#

%P!<%8%g%s 5 $G$O!"%3%^%s%I fit $N=q<0$OJQ99$5$l!"%-!<%o!<%I **error** $,;XDj$5$l$F$$$J$$>l9g$OC10L=E$_ (**unitweights**) $,%G%U%)%k%H$K$J$j$^$7$?!#%*%W%7%g%s **v4** $G gnuplot %P!<%8%g%s 4 $N%G%U%)%k%H$N5sF0$KLa$j$^$9!#0J2<$b;2>H: **fit (p. 75)**!#

## %U%)%s%H%Q%9 (fontpath)

**fontpath** $N@_Dj$O!"%U%)%s%H%U%!%$%k$rFI$_9~$`>l9g$N%U%!%$%k$N8!:w%Q%9$rDI2CDj5A$7$^$9!#:#$N$H$3$m!" postscript =PNO7A<0$N$_$, **fontpath** $r%5%]!<%H$7$F$$$^$9!#%U%!%$%k$,8=:_$N%G%#%l%/%H%j$K8+$D$+$i$J$+$C$?>l9g!"**fontpath** $N%G%#%l%/%H%j$,8!:w$5$l$^$9!#%5%]!<%H$7$F$$$k%U%)%s%H%U%!%$%k$N7A<0$K4X$9$k$h$j>\$7$$@bL@$O **terminal postscript** %;%/%7%g%s$NJ8=qCf$K$"$j$^$9!#

=q<0:

```
      set fontpath {"pathlist1" {"pathlist2"...}}
      show fontpath
```

%Q%9L>$OC10l$N%G%#%l%/%H%jL>!"$^$?$OJ#?t$N%Q%9L>$N%j%9%H$H$7$FF~NO$7$^$9!#J#?t$N%Q%9$+$i$J$k%Q%9%j%9%H$O OS 8GM-$N%Q%96h@Z$j!"Nc$($P Unix $G$O%3%m%s (':'), MS-DOS, Windows, OS/2 $G$O%;%_%3%m%s (';') Ey$G6h@Z$j$^$9!#**show fontpath**, **save**, **save set** %3%^%s%I$O!"2DHB@-$N$?$a$K OS 8GM-$N%Q%96h@Z$j$r%9%Z!<%9 (' ') $GCV$-49$($^$9!#%G%#%l%/%H%jL>$,% (%/%9%/%i%a!<%7%g%s%^!<%/ ('!') $G=*$C$F$$$k>l9g!"$=$N%G%#%l%/%H%j$N%5%V%G%#%l%/%H%j$b8!:w$5$l$^$9!#

4D6-JQ?t GNUPLOT_FONTPATH $,@_Dj$5$l$F$$$k>l9g!"$=$NFbMF$O **fontpath** $KDI2C$5$l$^$9$,!"$=$l$,@_Dj$5$l$F$$$J$$>l9g%7%9%F%`$K0MB8$7$?%G%U%)%k%H$NCM$,;HMQ$5$l$^$9!#:G=i$K%U%)%s%H%Q%9$r;H$C$?$H$-$K!"$=$N4v$D$+$N%G%#%l%/%H%j$,B8:_$9$k$+%F%9%H$5$l!"%;%C%H$5$l$^$9!#$h$C$F!"0lHV:G=i$N **set fontpath**, **show fontpath**, **save fontpath** $d!"Kd$a9~$_%U%)%s%H$r;HMQ$7$?>l9g$N **plot**, **splot** $O!">/$7;~4V$,$+$+$j$^$9!#$=$l$r>/$7$G$bC;$/$7$?$1$l$P!"4D6-JQ?t GNUPLOT_FONTPATH $r@_Dj$7$F$/$@$5$$!#$=$&$9$l$P%G%#%l%/%H%j$N%A%'%C%/$O OFF $K$J$j$^$9!#%G%U%)%k%H$N%U%)%s%H%Q%9$,2?$G$"$k$+$O!"**show fontpath** $G8+$k$3$H$,$G$-$^$9!#

**show fontpath** $O!"%f!<%6Dj5A$N fontpath $H%7%9%F%`$N fontpath $rJL!9$KI=<($7$^$9$,!"**save**, **save set** %3%^%s%I$O!"%f!<%6Dj5A$N **fontpath** $N$_$rJ]B8$7$^$9!#

gd %i%$%V%i%j$rDL$8$F%U%!%$%kL>$G%U%)%s%H$K%"%/%;%9$9$k=PNO%I%i%$%P$K4X$7$F$O!"%U%)%s%H8!:w%Q%9$O4D6-JQ?t GDFONTPATH $G@)8f$5$l$^$9!#

## <4$N9o$_=q<0 (format)

:BI8<4$N9o$_$N8+=P$7$O!"%3%^%s%I **set format** $^$?$O **set tics format** $^$?$O8DJL$K%3%^%s%I **set { <4}tics format** $G=q<0$r@_Dj$G$-$^$9!#

=q<0:

```
set format {<axes>} {"<format-string>"} {numeric|timedate|geographic}
show format
```

$3$3$G!"<axes> (<4) $O **x**, **y**, **xy**, **x2**, **y2**, **z**, **cb**!"$^$?$O2?$b;XDj$7$J$$$+ ($=$N>l9g$=$N=q<0$O$9$Y$F$N<4$KE,MQ$5$l$^$9) $N$$$:$l$+$G$9!#0J2<$N2 $D$N%3%^%s%I$OA4$/F1Ey$G$9:

```
set format y "%.2f"
set ytics format "%.2f"
```

=q<0J8;zNs$ND9$5$O 100 J8;z$^$G!"$H@)8B$5$l$F$$$^$9!#%G%U%)%k%H$N=q<0J8;zNs$O "% h" $G!"LaTeX 7O$N=PNO7A<0$G$O "$%h$" $G$9!#B>$K "%.2f" $d"%3.0em" $N$h$&$J=q<0$,9%$^$l$k$3$H$bB?$$$G$7$g$&!#"set format" $N8e$m$K2?$b$D$1$:$K<B9T$9$k$H!"%G%U%)%k%H$KLa$7$^$9!#

6uJ8;zNs "" $r;XDj$7$?>l9g!"9o$_<+?H$OI=<($7$^$9$,8+=P$7$O$D$1$^$;$s!#9o$_<+?H$r>C$9$K$O!" **unset xtics** $^$?$O **set tics scale 0** $r;HMQ$7$F$/$@$5$$!#

=q<0J8;zNs$G$O!"2~9TJ8;z (\n) $d3HD%J8;zNs=hM} (enhanced text) MQ$N%^!<%/%"%C%W$b;H$($^$9!# $3$N>l9g$O!"C10l0zMQId (') $G$J$/ (") $r;H$C$F$/$@$5$$!#0J2<$b;2>H: **syntax (p. 49)**!#"%" $,F,$K$D$+$J$$J8;z$O $=$N$^$^I=<($5$l$^$9!#$h$C$F!"=q<0J8;zNsFb$K%9%Z!<%9$dJ8;zNs$J$I$rF~$l$k$3$H$,$G$-$^$9!#Nc$($P "%g m" $H$9$l$P!"?tCM$N8e$K " m" $,I=<($5$l$^$9!#"%" <+?H$rI=<($9$k>l9g$K$O "%g %%" $N$h$&$K2 $D=E$M$^$9!#

9o$_$K4X$9$k$h$j>\$7$$>pJs$K$D$$$F$O!"0J2<$b;2>H: **set xtics (p. 187)**!#$^$?!"$3$NJ}K!$G=PNO$5$l$k?t;z$K%G%U%)%k%H0J30$N>.?tJ,N%J8;z$r;H$&$d$jJ}$K$D$$$F$O!"0J2<;2>H: **set decimalsign (p. 125)**!#0J2<$b;2>H!#% (%l%/%H%m%s (EE;R) %G%b (electron.dem).

### Gprintf

J8;zNs4X?t gprintf("format",x) $O!"gnuplot %3%^%s%I$N **set format**, **set timestamp** $J$I$HF1MM$N!"gnuplot FH<+$N=q<0;XDj;R$r;H$$$^$9!#$3$l$i$N=q<0;XDj;R$O!"I8=`E*$J C 8@8l$N4X?t$G$"$k sprintf() $N$b$N$HA4$/F1$8$G$O$"$j$^$;$s!#gprintf() $O!"@07A2=$5$l$k0z?t$O0l$D$7$+<u$1$D$1$^$;$s!#$=$N$?$a$K!"gnuplot $K$O sprintf("format",x1,x2,...) 4X?t$bMQ0U$5$l$F$$$^$9!#gnuplot $N=q<0%*%W%7%g%s$N0lMw$K$D$$$F$O!"0J2<;2>H: **format specifiers (p. 131)**!#

### =q<0;XDj;R (format specifiers)

;HMQ2DG=$J=q<0 (;~4V/F |IU%b!<%I$G$J$$>l9g) $O0J2<$NDL$j$G$9:

L\@9$j%i%Y%k$N?tCM=q<0;XDj;R

| =q<0 | @bL@ |
|---|---|
| %f | 8GDj>.?tE@I=5- |
| %e, %E | ;X?tI=5-; ;X?t$NA0$K”e”, ”E” $r$D$1$k |
| %g, %G | %e ($^$?$O %E) $H %f $NN,5- |
| %h, %H | %g $K "e%S" $G$J$/ "x10^{%S}" $+ "*10^{%S}" $r$D$1$k |
| %x, %X | 16 ?JI=5- |
| %o, %O | 8 ?JI=5- |
| %t | 10 ?J$N2>?tIt |
| %l | 8=:_$NBP?t<\$ND1$r4p?t$H$9$k2>?tIt |
| %s | 8=:_$NBP?t<\$ND1$r4p?t$H$9$k2>?tIt; Jd=uC10L (scientific power) |
| %T | 10 ?J$N;X?tIt |
| %L | 8=:_$NBP?t<\$ND1$r4p?t$H$9$k;X?tIt |
| %S | Jd=uC10L$N;X?tIt (scientific power) |
| %c | Jd=uC10LJ8;z |
| %b | ISO/IEC 80000 5-K! (ki, Mi, Gi, Ti, Pi, Ei, Zi, Yi) $N2>?tIt |
| %B | ISO/IEC 80000 5-K! (ki, Mi, Gi, Ti, Pi, Ei, Zi, Yi) $N@\F,<- |
| %P | &P$NG\?t |

Jd=uC10L ('scientific' power) $O! ";X?t$, 3 $NG\?t$G$"$k$h$&$J$b$N$G$9! #Jd=uC10L;X?t ("%c") $NJ8;z$X$NJQ 49$O -18 $+$i +18 $^$G$N;X?t$KBP$7$F%5%]!<%H$5$l$F$$$^$9! #$3$NHO0O30$N;X?t$N>l9g! "=q<0$ODL>o$N;X?t 7A<0$KLa$j$^$9! #

$[$+$K;H$&$3$H$N$G$-$k=$>~;l ("%" $H=q<0;XDj;R$N4V$K=q$/$b$N) $K$O! "<!$N$$$/$D$+$,$"$j$^$9: "-" $O?t ;z$r:85M$a$K$7! ""+" $O@5$N?t$K$bId9f$r$D$1! "" " (6uGr0l$D) $OIi$N?t$K "-" $r$D$1$k$Y$->l=j$K@5$N?t$N >l9g$K6uGr$r0l$D$D$1! ""#" $O>.?tE@0J2<$N?t;z$, 0 $@$1$G$"$C$F$b>.?tE@$r$D$1! "@5$N@0?t$O=PNOI}$rDj $a! "=PNOI};XDj$ND>A0$N "0" (J8;z$G$J$/?t;z) $O@hF,$K6u$$$?ItJ,$r6uGr$GKd$a$kBe$o$j$K0 $GKd$a! ">.?tE@ $N8e$KHsI i$N@0?t$r=q$$$?$b$N$O@:EY$r0UL#$7$^$9 (@0?t$N>l9g$O:G>.7e! ">.?t$N>l9g$O>.?tE@0J2<$N7e?t)! #

$3$l$i$NA4$F$N=$>~;l$r%5%]!<%H$7$F$$$J$$OS $b$"$k$G$7$g$&$7! "5U$K$3$10J30$N$b$N$r$b%5%]!<%H$9$kOS $b$"$k$G$7$g$&! #5?$o$7$$>l9g$O! "E,@Z$J;qNA$rD4$Y! "$=$7$F<B83$7$F$_$F$/$@$5$$! #

Nc:

```
set format y "%t"; set ytics (5,10)          # "5.0" $H "1.0"
set format y "%s"; set ytics (500,1000)      # "500" $H "1.0"
set format y "%+-12.3f"; set ytics(12345)    # "+12345.000  "
set format y "%.2t*10^%+03T"; set ytic(12345)# "1.23*10^+04"
set format y "%s*10^{%S}"; set ytic(12345)   # "12.345*10^{3}"
set format y "%s %cg"; set ytic(12345)       # "12.345 kg"
set format y "%.0P pi"; set ytic(6.283185)   # "2 pi"
set format y "%.0f%%"; set ytic(50)          # "50%"


set log y 2; set format y '%l'; set ytics (1,2,3)
#"1.0", "1.0", "1.5" $HI=<($5$l$k (3 $O 1.5 * 2^1 $J$N$G)
```

4]$a$H;X?t$,I,MW$H$J$k$h$&$J=q<0$G 9.999 $NMM$J?t;z$,=q$+$l$k>l9g$OLdBj$,5/$3$k$3$H$,$"$j$^$9! #

<4$N%G!<%?7?$,F|;~%G!<%? (time/date) $N>l9g! "=q<0J8;zNs$O 'strftime' 4X?t ('gnuplot' 30! #"man strftime" $H$7$F$_$F$/$@$5$$) $K4X$9$kM-8z$J;XDj$r9T$&I,MW$,$"$j$^$9! #;H$($kF~NO=q<0;XDj$N0lMw$K4X$7$F$O! "0J 2<;2>H**set timefmt (p. 180)**! #

### F|;~%G!<%?;XDj;R (time/date specifiers)

F|;~%G!<%?%b!<%I (time/date mode) $G$O! "<!$N=q<0$,;HMQ$G$-$^$9:

| F \|IU;XDj;R | |
|---|---|
| =q<0 | @bL@ |
| %a | MKF \|L>$N>JN,7A (Sun,Mon,...) |
| %A | MKF \|L> (Sunday,Monday,...) |
| %b, %h | 7nL>$N>JN,7A (Jan,Feb,...) |
| %B | 7nL> (January,February,...) |
| %d | F \| (01–31) |
| %D | "%m/%d/%y" $N4JN,7A (=PNO$N$_) |
| %F | "%Y-%m-%d" $N4JN,7A (=PNO$N$_) |
| %k | ;~ (0–23; 1 7e$^$?$O2 7e) |
| %H | ;~ (00–23; >o$K2 7e) |
| %l | ;~ (1–12; 1 7e$^$?$O2 7e) |
| %I | ;~ (01–12; >o$K2 7e) |
| %j | $=$NG/$NDL;;F \| (001–366) |
| %m | 7n (01–12) |
| %M | J, (00–60) |
| %p | ”am” $^$?$O ”pm” |
| %r | "%I:%M:%S %p" $N4JN,7A (=PNO$N$_) |
| %R | "%H:%M" $N4JN,7A (=PNO$N$_) |
| %S | IC (=PNO$G$O 00–60 $N@0?t!"F~NO$G$O<B?t) |
| %s | 1970 G/:G=i$+$i$NIC?t |
| %T | "%H:%M:%S" $N4JN,7A (=PNO$N$_) |
| %U | $=$NG/$NDL;;=5 (=5$OF \|MKF \|$+$i$H?t$($k) |
| %w | MKF \|HV9f (0–6, F \|MK = 0) |
| %W | $=$NG/$NDL;;=5 (=5$O7nMKF \|$+$i$H?t$($k) |
| %y | @>Nq (0-99!"1969-2068 G/$N2<2 7e) |
| %Y | @>Nq (4 7e) |

?t;z$rI=$9=q<0$K$O!"@hF,$K0 $rKd$a$k$?$a$K "0" (%<%m) $rA0$K$D$1$k$3$H$,$G$-!"$^$?:G>.$N=PNOI}$r;XDj$9$k$?$a$K@5$N@0?t$rA0$K$D$1$k$3$H$b$G$-$^$9! #=q<0 %S $H %t $O@:EY;XDj$b<u$1$D$1$k$N$G!">.?t$N;~/J,/IC$r=q$/$3$H$b$G$-$^$9! #

| ;~9o;XDj;R | |
|---|---|
| =q<0 | @bL@ |
| %tH | %(%]%C%/;~$X$NAjBPE*$J@5Ii$N;~ (24 $G$N4,La$7$J$7) |
| %tM | %(%]%C%/;~$X$NAjBPE*$J@5Ii$NJ, |
| %tS | D>A0$N tH, tM 9`L\$KBP1~$9$k@5Ii$NIC?t |

### Nc (**Examples**) F|IU=q<0$NNc:

x $NCM$,!"1976 G/ 12 7n 25 F|$N?<Lk>/$7A0$N;~9o$KBP1~$9$kIC?t$G$"$k$H2>Dj$7$^$9! #$3$N0LCV$N<4$N9o$_%i%Y%kJ8;zNs$O!"0J2<$N$h$&$K$J$j$^$9:

```
set format x                 # %G%U%)%k%H$G$O "12/25/76 \n 23:11"
set format x "%A, %d %b %Y"  # "Saturday, 25 Dec 1976"
set format x "%r %D"         # "11:11:11 pm 12/25/76"
```

;~9o=q<0$NNc:

F|IU=q<0;XDj$O!"IC?t$G$N;~4V$NCM$r!"$"$kFCDj$NF|$N;~7W$N;~9o$K%(%s%3!<%I$7$^$9! #$h$C$F!";~$O0 $+$i 23 $^$G!"J,$O0 $+$i 59 $^$G$N$_$rF0$-$^$9$,!"$=$l$i$NI i$NCM$O!"%(%]%C%/ (1970 G/ 1 7n 1 F|) $h$jA0$NF|IU$KBP1~$7$^$9! #IC?t$G$N;~4V$NCM$r!";~4V0 $KBP$9$kAjBPE*$J;~/J,/IC$N?tCM$H$7$F=PNO$5$;$k$K$O!";~4V=q<0 %tH %tM %tS $r;HMQ$7$^$9! #-3672.50 IC$NCM$O0J2<$N$h$&$K=PNO$5$l$^$9! #

```
set format x                 # %G%U%)%k%H$G$O "12/31/69 \n 22:58"
set format x "%tH:%tM:%tS"   # "-01:01:12"
set format x "%.2tH hours"   # "-1.02 hours"
set format x "%tM:%.2tS"     # "-61:12.50"
```

## Function style

$3$N%3%^%s%I$N7A<0$O8=:_$O?d>)$5$l$F$$$^$;$s!#0J2<;2>H:**set style function (p. 173)**!#

## Functions

**show functions** %3%^%s%I$O%f!<%6!<$,Dj5A$7$?4X?t$H$=$NDj5AFbMF$rI=<($7$^$9!#

=q<0:

```
    show functions
```

gnuplot $K$*$1$k4X?t$NDj5A$H$=$N;H$$J}$K$D$$$F$O!"0J2<;2>H:**expressions (p. 29)**!#0J2<$b;2>H%f!<%6Dj5A4X?t$G$N%9%W%i%$%s (spline.dem)

$*$h$S4X?t$HJ#AGJQ?t$rMc$K;HMQ (airfoil.dem)!#

## 3J;R@~ (grid)

%3%^%s%I **set grid** $O3J;R@~$rIA$-$^$9!#

=q<0:

```
set grid {{no}{m}xtics} {{no}{m}ytics} {{no}{m}ztics}
         {{no}{m}x2tics} {{no}{m}y2tics} {{no}{m}rtics}
         {{no}{m}cbtics}
         {polar {<angle>}}
         {layerdefault | front | back}
         {{no}vertical}
         {<line-properties-major> {, <line-properties-minor>}}
unset grid
show grid
```

3J;R@~$OG$0U$N<4$NG$0U$NBgL\@9$j/>.L\@9$j$KBP$7$FM-8z/L58z$K$G$-!"$=$NBgL\@9$j$H>.L\@9$j$KBP$9$k@~<o!"@~I}$b;XDj$G$-!"8=:_$N=PNOAuCV$,%5%]!<%H$9$kHO0O$G!"$"$i$+$8$aDj5A$7$?%i%$%s%9%?%$%k$r;HMQ$9$k$3$H$b$G$-$^$9(0J2<;2>H: **set style line (p. 174)**)!#

2<!85IA2h$G$O6K:BI83J;R$bA*Br$G$-$^$9!#$3$l$O!"gnuplot $,6K:BI8%b!<%I(polar) $N$H$-$N **set grid** $N%G%U%)%k%H$N5sF0$G$9$,!"L@<(E*$K**set grid polar <angle> rtics** $H$9$l$P!"6K:BI8%b!<%I$G$"$k$J$7$K4X$o$i$:<B9T$G$-$^$9!#F1?41_$Or<4$N<gL\@9/I{L\@9$G8r:9$9$k$h$&$KIA$-!"F07B$O<angle> $N3Q$r6u$1$FIA$-$^$9!#F1?41_$N<~0O$NL\@9$j$N9o$_$O!"**set ttics** $G@)8f$7$^$9$,!"$3$l$OF07B$N3J;R@~$r?7$?$K$O@8@.$7$^$;$s!#

**set grid** $,IA$/A0$K!"I,MW$JL\@9$j$OM-8z$K$J$C$F$$$J$1$l$P$J$j$^$;$s!#**gnuplot** $O!"B8:_$7$J$$L\@9$j$KBP$9$k3J;R$NIA2h$NL?Na$OC1$KL5;k$7$^$9!#$7$+$7!"8e$G$=$NL\@9$j$,M-8z$K$J$l$P$=$l$KBP$9$k3J;R$bIA$-$^$9!#

>.3J;R@~$KBP$9$k@~<o$r2?$b;XDj$7$J$1$l$P!"Bg3J;R@~$HF1$8@~<o$,;H$o$l$^$9!#%G%U%)%k%H$N6K:BI8$N3QEY$O30 EY$G$9!#

**front** $r;XDj$9$k$H!"3J;R@~$O%0%i%U$N%G!<%?$N>e$KIA$+$l$^$9!#**back** $,;XDj$5$l$?>l9g$O3J;R@~$O%0%i%U$N%G!<%?$N2<$KIA$+$l$^$9!#**front** $r;H$($P!"L)=8$7$?%G!<%?$G3J;R@~$,8+$($J$/$J$k$3$H$rKI$0$3$H$,$G$-$^$9!#%G%U%)%k%H$G$O **layerdefault** $G!"$3$l$O2D IA2h$G$O **back** $HF1$8$G$9!#3D IA2h$N%G%U%)%k%H$O!"3J;R$H%0%i%U$NOH$r2 $D$NIA2hC10L$KJ,N%$7!"3J;R$O8e$m$K!"OH$OIA2h%G!<%?$^$?$O4X?t$NA0$K=q$-$^$9!#$?$@$7!"**hidden3d** %b!<%I$G$O!"$=$l$,$=$l<+?H$NJB$S49$($r$7$F$$$^$9$N$G!"3J;R@~$N=gHV$N%*%W%7%g%s$OA4$FL5;k$5$l!"3J;R@~$b1#@~=hM}$K$+$1$i$l$^$9!#$3$l$i$N%*%W%7%g%s$O!"<B:]$K$O3J;R@~$@$1$G$J$/!"**set border** $K$h$k6-3&@~$H$=$NL\@9$j$N9o$_(0J2<;2>H: **set xtics (p. 187)**) $K$b1F6A$r5Z$\$7$^$9!#

3<!85IA2h$G$O!"x <4$H y <4$N9o$_0LCV$KBP$9$k3J;R@~$O!"%G%U%)%k%H$G$O z=0 $KJ?9T$JD1LL>e$K$7$+IA$-$^$;$s$,!"%-!<%o!<%I **vertical** $O!"3J;R@~$r xz LL$H yz LL$K$b zmin $+$i zmax $^$GIA$/$h$&$K$7$^$9!#

z $N3J;R@~$OIA2h$ND1LL$KIA$+$l$^$9!#$3$l$OIA2h$N<~$j$KItJ,E*$JH"$,IA2h$5$l$F$$$k>l9g$K$O$$$$$G$7$g$&!#0J2<;2>H: **set border (p. 115)**!#

## 1#@~=hM} (hidden3d)

**set hidden3d** %3%^%s%I$O6JLLIA2h(0J2<;2>H: **splot** (p. 195)) $G1#@~=hM}$r9T$J$&$h$&$K;X<($7$^$9!#$=$N=hM}$NFbIt%"%k%4%j%:%`$K4X$9$kDI2C5!G=$b$3$N%3%^%s%I$G@)8f$G$-$^$9!#

=q<0:

```
set hidden3d {defaults} |
             { {front|back}
               {{offset <offset>} | {nooffset}}
               {trianglepattern <bitpattern>}
               {{undefined <level>} | {noundefined}}
               {{no}altdiagonal}
               {{no}bentover} }
unset hidden3d
show hidden3d
```

gnuplot $NDL>o$NI=<($H$O0[$J$j!"1#@~=hM}$G$OM?$($i$l$?4X?t!"$^$?$O%G!<%?$N3J;R@~$r!"<B:]$N6JLL$,$=$N6JLL$NGX8e$K$"$C$F1#$5$l$F$$$kIA2hMWAG$O8+$;$J$$$N$HF1$8$h$&$K=hM}$7$^$9!#$3$l$,5!G=$9$k$?$a$K$O!"$=$N6JLL$,'3J;R>u' (0J2<;2>H: **splot datafile** (p. 196)) $G$"$kI,MW$,$"$j!"$^$?$=$l$i$O **with lines** $+ **with linespoints** $GIA$+$l$F$$$J$1$l$P$$$1$^$;$s!#

**hidden3d** $,M-8z$J$H$-$O!"3J;R@~$@$1$G$J$/!"LLItJ,$dEZBf$N>e$NEy9b@~(0J2<;2>H: **set contour** (p. 122)) $b1#$5$l$^$9!#J#?t$NLL$rIA2h$7$F$$$k>l9g$O!"3F6JLL$O<+J,<+?H$HB>$N6JLL$G1#$5$l$kItJ,$b;}$A$^$9!#6JLL>e$X$NEy9b@~$NI=<( (**set contour surface**) $O5!G=$7$^$;$s!#

gnuplot %P!<%8%g%s 4.6 $G$O!"%0%i%U>e$K6JLL$,0l$D$b$J$$>uBV$G$b!"hidden3d $O **points**, **labels**, **vectors**, **impulses** $N3<!85$NIA2h%9%?%$%k$K1F6A$rM?$($^$9!#**vectors** $O!"1#$5$l$J$$ItJ,$O@~J, (Lp@h$J$7) $H$7$FI=<($5$l$^$9!#%0%i%UFb$N3F!9$NIA2h$r$3$N=hM}$+$iL@<(E*$K=|30$7$?$$$H$-$O!"**with** ;XDj$KFCJL$N%*%W%7%g%s **nohidden3d** $rDI2C$7$F$/$@$5$$!#

hidden3d $O!"pm3d %b!<%I$GIA2h$5$l$?!"EI$jDY$5$l$?6JLL$K$O1F6A$rM?$($^$;$s!#pm3d $N6JLL$KBP$7$FF1MM$N8z2L$r=c?h$KF@$?$$$J$i$P!"$3$l$NBe$o$j$K **set pm3d depthorder** $r;H$C$F$/$@$5$$!#J#?t$N pm3d 6JLL$KDL>o$N **hidden3d** =hM}$rAH$_9g$o$;$k$K$O!"%*%W%7%g%s **set hidden3d front** $r;HMQ$7$F$/$@$5$$!#$3$l$O!"hidden3d =hM}$NA4$F$NMWAG$r!"pm3d 6JLL$r4^$`;D$j$NB>$NIA2hMWAG$N8e$K6/@)E*$KIA2h$9$k$b$N$G$9!#

4X?tCM$O3J;R8IN)@~$N8rE@$GI>2A$5$l$^$9!#8+$k$3$H$N=EMh$k@~J,$r5a$a$k$H$-$O8D!9$N4X?tCM!"$"$k$$$O%G!<%?$NCM$O$=$N%"%k%4%j%:%`$K$h$C$F@~7AJd4V$5$l$^$9!#$3$l$O!"**hidden3d** $GIA2h$9$k>l9g$H **nohidden3d** $GIA2h$9$k>l9g$G4X?t$N8+$+$1$,0[$J$k$3$H$r0UL#$7$^$9!#$J$<$J$i$P!"8e<T$N>l9g4X?tCM$O3FI8K\E@$GI>2A$5$l$k$+$i$G$9!#$3$NOc$$$K4X$9$k5DO@$K$D$$$F$O!"0J2<;2>H: **set samples** (p. 168), **set isosamples** (p. 136)!#

6JLL$N1#$5$l$kItJ,$r>C5n$9$k$N$K;H$o$l$k%"%k%4%j%:%`$O!"$3$N%3%^%s%I$G@)8f$5$l$k$$$/$D$+$ND2C%*%W%7%g%s$r;}$C$F$$$^$9!#**defaults** $r;XDj$9$l$P=$l$i$O$9$Y$F!"0J2<$G=R$Y$k$h$&$J%G%U%)%k%H$NCM$K@_Dj$5$l$^$9!#**defaults** $,;XDj$5$l$J$+$C$?>l9g$K$O!"L@<(E*$K;XDj$5$l$?%*%W%7%g%s$N$_$,1F6A$r<u$1!"$=$l0J30$O$b$N$OA0$NCM$,0z$-7Q$,$l$^$9!#$h$C$F!"$=$l$i$N%*%W%7%g%s$NCM$r$$A$$A=$@5$9$k$3$H$J$//!"C1$K **set {no}hidden3d** $N_$G1#@~=hM}$r%*%s/%*%U$G$-$k$3$H$J$j$^$9!#

:G=i$N%*%W%7%g%s **offset** $O'N"B&' $N@~$r$IA2h$9$k@~$N<o$K1F6A$rM?$($^$9!#DL>o$O6JLL$NI=$N"$r6hJL$9$k$?$a$K!"N"B&$N@~<o$O!"I=B&$N@~<o$h$j0l$DBg$-$$$HV9f$N@~<o$,;H$o$l$^$9!#**offset <offset>** $K$h$C$F!"$=$NDI2C$9$kCM$r!"%G%U%)%k%H$N1 $H$O0[$J$kA}J,CM$KJQ99$G$-$^$9!#**nooffset** %*%W%7%g%s$O **offset 0** $r0UL#$7$!"$3$l$OI=$N"$GF1$8@~<o$r;H$&$3$H$K$J$j$^$9!#

<!$N%*%W%7%g%s$O **trianglepattern <bitpattern>** $G$9!#<bitpattern> $O0 $+$i 7 $^$G$N?t;z$G!"%S%C%H%Q%?!<%s$H2r<a$5$l$^$9$,!"$3$N%S%C%H%Q%?!<%s$N3F%S%C%H$O$=$l$i$N; 03Q7A$KJ,3d$5$l$k$H$-$NBP3QJU$G$9!#%G%U%)%k%H$N%S%C%H%Q%?!<%s$O 3 $G!"$3$l$OA4$F$N?eJ?JU$H?bD>JU$rI=<($7!"BP3QJU$OI=<($7$J$$$3$H$r0UL#$7$^$9!#BP3QJU$bI=<($9$k>l9g$O 7 $r;XDj$7$^$9!#

%*%W%7%g%s **undefined <level>** $O!"Dj5A$5$l$F$$$J$$(7g$1$F$$$k%G!<%?$^$?$OL$Dj5A$N4X?tCM) $+!"$^$?$OM?$($i$l$? x,y,z $NHO0O$rD6$($F$$$k%G!<%?E@$KE,MQ$5$;$k%"%k%4%j%:%`$r;X<($7$^$9!#$=$N$h$&$JE@$O!"$=$l$G$bI=<($5$l$F$7$^$&$+!"$^$?$OF~NO%G!<%?$+$i<h$j=|$+$l$^$9!#<h$j=|$+$l$F$7$^$&E@$K@\$9$kA4$F$N6JLLMWAG$OF1MM$K<h$j=|$+$l!"$h$C$F6JLL$K7j$,@8$8$^$9!#<level> = 3 $N>l9g!"$3$l$O **noundefined** $HF1$8

$G!"$I$s$JE@$b<N$F$i$1$^$;$s!#$3$1$OB>$N>l=j$G$"$i$f$k<oN`$NLdBj$r0z$-5/$3$7F@$k$N$G;H$o$J$$$Y$-$G$9!#<level> = 2 $G$OL$Dj5A$NE@$O<N$F$i$1$^$9$,!"HO0O$rD6$($?E@$O<N$F$i$1$^$;$s!#<level> = 1 $G$O!"$3$1$,%G%U%)%k%H$G$9$,!"HO0O$rD6$($?E@$b<N$F$i$1$^$9!#

**noaltdiagonal** $r;XDj$9$k$H!"**undefined** $,M-8z$N$H$-($9$J$o$A<level> $,3 $G$J$$>l9g) $K5/$3$k0J2<$N>l9g$N%G%U%)%k%H$G$N<h07$$rJQ99$G$-$^$9!#F~NO6JLL$N3F3J;R>u$NItJ,$O0lJ}$NBP3Q@~$K$h$C$F2 $D$N;03Q7A$KJ,3d$5$l$^$9!#DL>o$O$=$l$i$NBP3Q@~$NA4$F$,3J;R$KBP$7$FF1$8J}8~$r8~$$$F$$$^$9!#$b$7!"$"$k3J;R$N4 $D$N3Q$N$&$A0l$D$,**undefined** =hM}$K$h$j$H$j=|$+$l$F$$$F!"$=$N3Q$,DL>o$NJ}8~$NBP3Q@~$K>h$C$F$$$$k>l9g$O!"$=$NN>J}$N;03Q7A$,<h$j=|$+$l$F$7$^$$$^$9!#$7$+$7!"$b$7%G%U%)%k%H$N@_Dj$G$"$k**altdiagonal** $,M-8z$K$J$C$F$$$k>l9g!"$=$N3J;R$K$D$$$F$OB>J}8~$NBP3Q@~$,Be$o$j$KA*Br$5$l!"6JLL$N7j$NBg$-$5$,:G>.$K$J$k$h$&$K$7$^$9!#

**bentover** %*%W%7%g%s$O:#EY$O**trianglepattern** $H$H$b$K5/$3$kJL$N$3$H$r@)8f$7$^$9!#$+$J$j$7$o$/$A$c$N6JLL$G$O!"2<$N ASCII J8;z3 ($K=q$$$?$h$&$K!"6JLL$N1 $D$N3J;R$,2 $D$KJ,$1$i$1$?;03Q7A$NI=$HN"$NH?BPB&$,8+$($F$7$^$&>l9g($9$J$o$A!"85$N;M3Q7A$,@^$j6J$2$i$1$F$$$k('bent over') >l9g) $,$"$j$^$9:

```
                                                         C----B
     85$N4 3Q7A:      A--B       I=<($5$l$k 4 3Q7A:        |\    |
   ("set view 0,0")    | /|     ("set view 75,75" perhaps)  | \   |
                       |/ |                                 |  \  |
                       C--D                                 |   \|
                                                            A    D
```

6JLL$N3J;R$NBP3QJU$,<bitpattern> $N2 bit $K$h$C$F8+$($k$h$&$K$O$J$C$F$O$$$J$$>l9g!">e$NBP3QJU CB $O$I$3$K$b=q$+$l$J$$$3$H$K$J$j!"$=$l$,7k2L$NI=<($rM}2r$7$K$/$$$b$N$K$7$^$9!#%G%U%)%k%H$GDj5A$5$l$k **bentover** %*%W%7%g%s$O!"$3$N$h$&$J>l9g$=$l$rI=<($9$k$h$&$K$7$^$9!#$b$7$=$&$7$?$/$J$$$J$i!"**nobentover** $rA*Br$7$F$/$@$5$$!#0J2<$b;2>H1 #@~=hM}$N%G%b (hidden.dem)

$*$h$SJ#; ($J1 #@~$N%G%b (singulr.dem).

## Historysize

(Hs?d>)) **set historysize N** $O!"**set history size N** $HF1$8$G$9!#**unset historysize** $O!"**set history size -1** $HF1$8$G$9!#

## %3%^%s%IMzNr (history)

=q<0:

```
set history {size <N>} {quiet|numbers} {full|trim} {default}
```

gnuplot $N=*N;;~$K%R%9%H%j%U%!%$%k$KJ]B8$9$k9T?t$r!"history size $NCM$K@)8B$7$^$9!#**set history size -1** $H$9$k$H!"%R%9%H%j%U%!%$%k$K=q$-=P$99T?t$N@)8B$,$J$/$J$j$^$9!#

%G%U%)%k%H$G$O!"%3%^%s%I **history** $O3F%3%^%s%I$NA0$K9THV9f$r=PNO$7$^$9!#**history quiet** $O!":#2s$N<B9T$KBP$7$F$N$_HV9f$r>JN,$7$^$9$,!"**set history quiet** $O!":#8e$N$9$Y$F$N **history** $NHV9f$r>JN,$7$^$9!#

%*%W%7%g%s **trim** $O!"8=:_$N%3%^%s%I$KBP$9$kA0$NF1$8$b$N$r:o=|$9$k$3$H$G!"%3%^%s%IMzNrFb$N=EJ#$9$k9T$N?t$r8:$i$7$^$9!#gnuplot $N%P!<%8%g%s 5 0JA0$G$O!"$3$l$,%G%U%)%k%H$N5sF0$G$7$?!#

%G%U%)%k%H$N@_Dj: **set history size 500 numbers trim**

## 8IN)@~%5%s%W%k?t (isosamples)

4X?t$rLL$H$7$FIA2h$9$k>l9g$N8IN)@~(3J;R) $NL)EY$O%3%^%s%I **set isosamples** $GJQ99$G$-$^$9!#

=q<0:

```
set isosamples <iso_1> {,<iso_2>}
show isosamples
```

3F6JLL%0%i%U$O <iso_1> 8D$N u-8IN)@~$H <iso_2> 8D$N v-8IN)@~$r;}$A$^$9!#<iso_1> $N$_;XDj$9$l$P!"<iso_2> $O <iso_1> $HF1$8CM$K@_Dj$5$l$^$9!#%G%U%)%k%H$G$O!"u, v $=$l$>$l 10 K\$NI8K\2=$,9T$o$l$^$9!#

I 8K\?t$r$b$C$HB?$/$9$1$P$h$j@53N$J%0%i%U$,:n$i$1$^$9$,!";~4V$,$+$+$j$^$9!#$3$1$i$N%Q%i%a!<%?$O!"%G!<%?%U%!%$%k$NIA2h$K$O2?$b1F6A$rM?$($^$;$s!#

8IN)@~$H$O!"6JLL$N01$D$NG^2pJQ?t$r8GDj$7$F!"$b$&01$D$NG^2pJQ?t$K$h$C$FIA$+$1$k6J@~$N$3$H$G$9!#8IN)@~$O!"6JLL$rI=<($9$kC1=c$JJ}K!$rM?$($^$9!#6JLL s(u,v) $NG^2pJQ?t u $r8GDj$9$k$3$H$G u-8IN)@~ c(v) = s(u0,v) $,:n$i$1!"G^2pJQ?t v $r8GDj$9$k$3$H$G v-8IN)@~ c(u) = s(u,v0) $,$G$-$^$9!#

4X?t$N6JLL%0%i%U$,1#@~=hM}$J$7$GIA$+$1$F$$$k>l9g!"**set samples** $O3F8IN)@~>e$GI8K\2=$5$1$kE@$N?t$r@)8f$7$^$9!#0J2<;2>H: **set samples (p. 168)**,**set hidden3d (p. 135)**!#Ey9b@~IA2h%k!<%A%s$O!"4X?t$NE@$NI8K\2=$O3F8IN)@~$N8rE@$G9T$o$1$k$H2>Dj$7$F$$$k$N$G!"4X?t$N6JLL$HEy9b@~$N2rA|EY$rJQ99$9$9$k$H$-$O!"**isosamples** $HF1$8$h$&$K **samples** $rJQ99$9$9$k$N$,K>$^$7$$$G$7$g$&!#

## Jitter

=q<0:

```
set jitter {overlap <yposition>} {spread <factor>} {wrap <limit>}
           {swarm|square}
```

Nc:

```
set jitter                       # 1 J8;zI}Fb$NE@$N jitter
set jitter overlap 1.5           # 1.5 J8;zI}Fb$NE@$N jitter
set jitter over 1.5 spread 0.5   # F1>e!"$7$+$7 x $N0\F0$OH>J,I}
```

%G!<%?$N1 $D!"$^$?$ON>J}$N:BI8$,N%;6CM$K@)8B$5$1$F$$$k>l9g!"B?$/$NE@$,40A4$K8_$$$N?>e$K>h$C$+$k>l9g$,$"$j$^$9!#jitter (MI$i$.) $O!"$3$1$i=E$J$kE@$r!"$=$1$i$N:BI8$K$:$i$7CM$rM?$($k$3$H$G$=$NE@$rK<u$K9-$2$^$9!#E@$,=E$J$C$F$$$k$H8+$J$9$?$a$NogCM$O!"J8;zI}C10L!"$"$k$$$OG$0U$N:BI8%*%W%7%g%s$r;H$C$F;XDj$G$-$^$9!#0J2<;2>H: **coordinates (p. 26)**!#jitter $O!"2<!85%0%i%U$N **with points** $H **with impulses** $K$N$_1F6A$rM?$($^$9!#

%G%U%)%k%H$N jitter F0:n$O!"E@$r x J}8~$N$_0\F0$7$^$9!#$3$1$O!!V%S!<%9%)!<%`%0%i%U!W(bee swarm plot) $H8F$P$1$kFHFC$N%Q%?!<%s$r:n$j$^$9!#%*%W%7%g%s$N%-!<%o!<%I **square** $O!"0\F0$9$kE@$N x :BI8$K2C$($F!"**overlap** $G;XDj$7$?5wN%$@$1$O>/$J$/$H$b$N%$1$?JL!9$N3,AX$K$$$k$h$&$K y :BI8$bB7$($^$9!#

J8;zC10L$G$N:GBg$N0\F05wN%$O!"%-!<%o!<%I **wrap** $G@)8B$r$+$1$i$1$^$9!#

=E$J$j$NH=Dj4p=`$H!"MI$i$.$NBg$-$5$O!"$$$:$1$b%G%U%)%k%H$G$O1 J8;zC10L$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#$h$C$F%0%i%U$N8+$?L\$O!"=PNO7A<0$N%U%)%s%H%5%$%:!"%-%c%s%P%9%5%$%:!"3HBgN($K$h$C$FJQ99$7$F$7$^$$$^$9!#$3$1$rHr$1$k$K$O!"=E$J$j$NH=Dj4p=`$r y :BI87O$NC10L(%-!<%o!<%I **first**) $G;XDj$7!"E@$N%5%$%:$H3HBg78?t$rE,@Z$JCM$KD4@0$7$F$/$@$5$$!#0J2<;2>H:**coordinates (p. 26)**, **pointsize (p. 166)**, **jitter (p. 137)**!#

## K^Nc (**key**)

%3%^%s%I **set key** $O!"IA2hNN0hFb$N3F%0%i%U$KBP$9$k%?%$%H%k$H%5%s%W%k(@~J,!"E@!"H") $r;}$DK^Nc($^$?$OI=Bj) $rM-8z$K$7$^$9!#K^Nc$N5!G=$O!"**set key off** $+ **unset key** $H$9$k$3$H$GL58z$K$G$-$^$9!#K^Nc$N8D!9$N9`L\$K$D$$$F$O!"BP1~$9$k plot %3%^%s%I$G%-!<%o!<%I **notitle** $r;HMQ$9$k$3$H$GL58z$K$G$-$^$9!#K^Nc$N%?%$%H%kJ8;zNs$O!"%*%W%7%g%s **set key autotitle** $d!"8D!9$N **plot** $d **splot** %3%^%s%I>e$N **title** %-!<%o!<%I $G@)8f$G$-$^$9!#>\:Y$O0J2<;2>H: **plot title (p. 105)**!#

=q<0:

```
set key {on|off} {default}
      {{inside | outside | fixed}
        | {lmargin | rmargin | tmargin | bmargin}
        | {at <position>}}
      {left | right | center} {top | bottom | center}
      {vertical | horizontal} {Left | Right}
      {{no}enhanced}
      {{no}opaque}
      {{no}reverse} {{no}invert}
      {samplen <sample_length>} {spacing <line_spacing>}
      {width <width_increment>} {height <height_increment>}
```

```
          {{no}autotitle {columnheader}}
          {title {"<text>"} {{no}enhanced} {center | left | right}}
          {font "<face>,<size>"} {textcolor <colorspec>}
          {{no}box {linestyle <style> | linetype <type> | linewidth <width>}}
          {maxcols {<max no. of columns> | auto}}
          {maxrows {<max no. of rows> | auto}}
     unset key
     show key
```

K^Nc (key) $O3FMWAG$r **vertical** (=D) $+ **horizontal** (2#) $N;XDj$K=>$C$F=E$M$^$9!#**vertical** $N>l9g!"K^Nc$O 2DG=$J$i$P 2,3 8D$N=D$NNs$r;H$$$^$9!#$9$J$o$A!"?bD>J}8~$N>l=j$,$"$k4V$O3FMWAG$r 1 $D$NNs$KJB$Y$^$9$,!"$=$N<!$O?7$7$$Ns$KJB$Y;O$a$^$9!#?bD>J}8~$N9T?t$O!"**maxrows** $r;H$C$F@)8B$G$-$^$9!#**horizontal** $N>l9g $O!"K^Nc$O2#$N9T?t$r$J$k$Y$/>/$J$/$7$h$&$H$7$^$9!#?eJ?J}8~$NNs?t$O **maxcols** $G@)8B$G$-$^$9!#

%G%U%)%k%H$G$O!"K^Nc$O%0%i%UNN0h$NFbB&$N1&>e$N3Q$KCV$+$l$^$9!#%-!<%o!<%I **left**, **right**, **top**, **bottom**, **center**, **inside**, **outside**, **lmargin**, **rmargin**, **tmargin**, **bmargin** (, **above**, **over**, **below**, **under**) $O!"%0%i%UNN0h$NB>$N>l=j$X$N<+F0E*$JG[CV$N$?$a$K;HMQ$7$^$9!#K^Nc$NIA2h$r$I$3$KCV$/$+$r$h$j>\$7$/;X<($9$k$?$a$N **at <position>** $b$"$j$^$9!#$3$N>l9g!"%-!<%o!<%I **left**, **right**, **top**, **bottom**, **center** $,F1MM$N4p=`E@9g$o$;$N@_Dj$NL\E*$G;H$o$l$^$9!#$h$j>\$7$/$O!"0J2<;2>H: **key placement (p. 139)**!#

%0%i%U$N%?%$%H%k$N9TB7$($O **Left**, **Right** (%G%U%)%k%H) $G;X<($7$^$9!#%i%Y%kJ8;zNs$H6J@~$N%5%s%W%k$O:81&F~$l4X$($k$3$H$,$G$-$^$9 (**reverse**) $7!"A4BN$rOH$G0O$`$3$H$b$G$-$^$9 (**box {...}**)!#$=$NOH$N@~$O!"@~<o (**linetype**), @~I} (**linewidth**)!"$"$k$$$OD\j5A:Q$N%i%$%s%9%?%$%k (**linestyle**) $r;XDj$9$k$3$H$b$G$-$^$9!#

K^Nc$NJ8;zNs$O!"%G%U%)%k%H$G3HD%J8;zNs%b!<%I (**enhanced**) $K@_Dj$5$l$F$$$^$9$,!"$3$l$O%*%W%7%g%s **{no}enhanced** $GJQ99$G$-!"%-!<$N%?%$%H%k$@$1$d!"8D!9$N%0%i%UKh$KJQ99$9$k$3$H$b2DG=$G$9!#

%G%U%)%k%H$G$O!"K^Nc$O0l$D$N%0%i%U$HF1;~$K:n$i$l$^$9!#$9$J$o$A!"K^Nc$N5-9f$H%?%$%H%k$O!"$=$l$KBP1~$9$k%0%i%U$HF1;~$KIA$+$l$^$9!#$=$l$O!"?7$7$$%0%i%U$,;~$K$OK^Nc$N>e$KMWAG$r$+$V$;$FG[CV$7$&$k$3$H$r0UL#$7$^$9!#**set key opaque** $O!"K^Nc$r$9$Y$F$N%0%i%U$NIA2h$,=*$C$?8e$K@8@.$5$;$^$9!#$3$N>l9g!"K^Nc$NNN0h$OGX7J?'$GEI$j$D$V$5$l$FK^Nc$N5-9f$H%?%$%H%k$,IA$+$l$^$9!#$h$C$F!"K^Nc<+?H$O$$$/$D$+$NIA2hMWAG$rJ$$$1#$7$F$7$^$$$F@$k$3$H$K$J$j$^$9!#**set key noopaque** $G%G%U%)%k%H$KI|5"$G$-$^$9!#

%G%U%)%k%H$G$O!":G=i$NIA2h$N%i%Y%k$,K^Nc$N0lHV>e$K8=$o$l!"$=$l$KB3$/%i%Y%k$,$=$N2<$KJB$s$G9T$-$^$9!#%*%W%7%g%s **invert** $O!":G=i$N%i%Y%k$rK^Nc$N0lHV2<$KCV$-!"$=$l$KB3$/%i%Y%k$r$=$N>e$KJB$Y$F9T$-$^$9!#$3$N%*%W%7%g%s$O!"K^Nc$N%i%Y%k$N=D$NJB$S$N=gHV$r!"@Q$_>e$27A<0$N%R%9%H%0%i%`(**histograms**) $NH"$N=gHV$K9g$o$;$k$H$-$KJXMx$G$7$g$&!#

<height_increment> $O!"K^Nc$NH"$N9b$5$K2C$($?$j8:$i$7$?$j$9$k9b$5 (2?J8;zJ,$+) $rI=$9?tCM$G$9!#$3$l$O<g$K!"K^Nc$N2s$j$KH"$rIA$/>l9g$G!"K^Nc$NJB$S$N2s$j$N6-3&@~$r$h$jBg$-$/$7$?$$>l9g$N$b$N$G$9!#

A4BN$KE0$k%?%$%H%k$rK^Nc$N>e$K$D$1$k$3$H$b$G$-$^$9 (**title "<text>"**)!#C10 10 zMQId(') $HFs=E0zMQId(") $N0c$$$K$D$$$F$O!"0J2<$b;2>H: **syntax (p. 49)**!#%?%$%H%k$N9TB7$($O%G%U%)%k%H$G$OCf1{9g$o$;$G!"$=$l$O%-!<%o!<%I **right** $d **left** $GJQ99$9$k$3$H$b$G$-$^$9!#

**set key** $N%G%U%)%k%H$O!"**on**, **right**, **top**, **vertical**, **Right**, **noreverse**, **noinvert**, **samplen 4**, **spacing 1**, **notitle**, **nobox** $G$9!#K^Nc$NOH$N@~<o$O%G%U%)%k%H$G$O%0%i%UIA2h$N3OOH$HF1$8$b$N$,;H$o$l$^$9!#**set key default** $H$9$k$H%G%U%)%k%H$N@_Dj$KLa$j$^$9!#

K^Nc$O!"1 9T$K1 6J@~J,$:$D$N?t9T$N$^$H$^$j$H$7$F=q$+$l$^$9!#3F9T$N1&B&$K$O (**reverse** $r;H$C$F$$$l$P:8B&$K$O) $=$N6J@~$HF1$8<cN`$ND>@~$N%5%s%W%k$,0z$+$l!"B>$NB&$K$O **plot** %3%^%s%I$+$iF@$i$l$kJ8;zNs (title) $,CV$+$l$^$9!#$3$l$i$N9T$O!"2M6u$ND>@~$,K^Nc$N:8B&$H1&B&$rJ,$1$k$+$N$h$&$K?bD>$K@0Ns$5$l$^$9!#%3%^%s%I **set key** $G;XDj$9$k:BI8$O$3$N2M6u$N@~J,$N>e$NC<$N:BI8$G$9!#**plot** $G$OD>@~$N0LCV$r;XDj$9$k$?$a$K x $H y $@$1$r;H$$$^$9!#

TeX, LaTeX 7O$N=PNO7A<0$d!"@07A>pJs$,J8;zNs$KKd$a9~$^$l$k=PNO7A<0$r;H$&>l9g$O!"**gnuplot** $OK^Nc$N0LCV7h$a$N$?$a$NJ8;zNs$NI}$rI>2A$9$k$3$H$7$+$G$-$^$;$s!#$h$C$FK^Nc$r:8$KCV$/>l9g$O!"**set key left Left reverse** $H$$$&AH9g$;$r;H$&$N$,$$$$$G$7$g$&!#

### 3 <!85%0%i%U$NK^Nc (3D key)

3 <!85%0%i%U (**splot**) $NK^Nc$NG[CV$O!"%G%U%)%k%H$G$O **fixed** %*%W%7%g%s$r;HMQ$7$^$9!#$3$l$O!"0JA0$NHG$N gnuplot $H$O0[$J$k5sF0$G$"$k$3$KCm0U$7$F$/$@$5$$!#**fixed** $K$h$kG[CV$O!"**inside** $K$h$kG[CV$K;w$F$$$^$9

$,!"=EMW$J0c$$$,0 1$D$"$j$^$9! #3 <!8 5%0%i%U$N; kE@$,2 sE>$7$?$j%9%1!<%k$9$k$H!"$=$1$KH<$J$C$FI A2h$N6-3&$bJQ2=$7$^$9! #K^Nc$NG[CV$, **inside** $N>19g$O!"; kE@$,JQ9 9$9$k$H$-$K$3$1$i$N6-3&$,0\F0$9$k$?$a!"K^Nc $b0\F0$7$^$9! #**fixed** $N>19g$O!"; k3Q$d%9%1!<%k$NJQ9 9$rL5; k$7$FK^Nc$rG[CV$9$k$N$G!"%0%i%U$,2 sE>$7$F$b!" K^Nc$N0LCV$O%-%c%s%P%9$N0 1$D$N>1=j$K8GD j$5$1$?$^$^$K$J$j$^$9! #

$J$*!"2 <!8 5%0%i%U$G$O!"**fixed** %*%W%7%g%s$O4 0A4$K **inside** $HF1$8$G$9! #

**splot** $GEy9b@~$r=q$/>19g!"%G%U%)%k%H$G$O0 [$J$k@~<o$N8D!9$NEy9b@~%1%Y%k$KBP$7$F!"JL!9$NK^Nc$N9 `L\$r @8@.$7$^$9! #$3$1$rJQ9 9$9$k$K$O!"0J2<; 2>H: **set cntrlabel (p. 118)**! #

### K^Nc$N%5%s%W%k (key examples)

0J2<$O%G%U%)%k%H$N0LCV$KK^Nc$rI=<($7$^$9:

```
set key default
```

0J2<$OK^Nc$rI=<($7$J$/$7$^$9:

```
unset key
```

0J2<$O%G%U%)%k%H$N (Bh0 1$N) :BI 87O$G$N (2,3.5,2) $N0LCV$KK^Nc$rI=<($7$^$9:

```
set key at 2,3.5,2
```

0J2<$OK^Nc$r%0%i%U$N2<$KI=<($7$^$9:

```
set key below
```

0J2<$OK^Nc$r: 82<3Q$KI=<($7!"%F%-%9%H$O: 8$K9TB7$($G!"%?%$%H%k$r$D$1!"@~<o 3 $N3 0OH$r=q$-$^$9:

```
set key left bottom Left title 'Legend' box 3
```

### K^Nc$N<+F0%?%$%H%k (key autotitle)

**set key autotitle** $O!"K^Nc$N3F%0%i%U$r!"plot %3%^%s%I$G; HMQ$7$?%G!<%?%U%!%$%k$d4X?t$NL>A0$K$h$C$FFC D j$9$k$h$&$K$7$^$9$,!"$3$1$,%G%U%)%k%H$N5 sF0$G$9! #**set key noautotitle** $O!"$=$N<+F0E*$J%0%i%U$N%?%$ %H%kI U$1$rL58 z$K$7$^$9! #%3%^%s%I **set key autotitle columnheader** $O!"3FF~NO%G!<%?$N@hF,9T$N3FNs$N % (%s%H%j$r%F%-%9%HJ8; zNs$H2r<a$7!"BP1~$9$kI A2h%0%i%U$N%?%$%H%k$H$7$F; HMQ$7$^$9! #I A2h$5$1$kNL$,!"J# ?t$NNs%G!<%?$N4X?t$G$"$k>19g$O!"gnuplot $O$I$NNs$r%?%$%H%k$NI A2h$K; H$($P$$$$$N$+$o$+$j$^$;$s$N$G!" $=$N>19g!"plot %3%^%s%I>e$G!"Nc$($P0J2<$N$h$&$KL@<(E*$K%?%$%H%k$NNs$r; XD j$9$kI,MW$,$"$j$^$9! #

```
plot "datafile" using (($2+$3)/$4) title columnhead(3) with lines
```

Cm0U: **set key autotitle columnheader** $H$9$k$H!"$?$H$(K^Nc (key) $, **unset key** $GL58 z$K$J$C$F$$$k>1 9g$G$b!"1 NsL\$r%G!<%?$H$7$F$G$O$J$/!"Ns$N%X%C%@$H$7$F=hM}$7$^$9! #$3$1$O!"**stats** $d **fit** $N$h$&$KK^Nc$r :n$i$J$$%3%^%s%I$KBP$7$F$bF1MM$G$9! #

$^$?!"$$$:$1$N>19g$G$b!"plot %3%^%s%I$KL@<(E*$J **title** $d **notitle** %-!<%o!<%I$r; XD j$9$1$P!"$=$1$O **set key autotitle** $K$h$k@_D j$h$jM%@h$5$1$^$9! #

### K^Nc$NG[CV (key placement)

$3$N@a$G$O!"<+F0E*$K@8@.$5$1$kDI>o$NK^Nc$NG[CV$N@bL@$r$7$^$9! #Fs<!E*$JK^Nc$N9=@.$d!"B>$N>1=j$X$NI A 2h%?%$%H%k$NG[CV$K$D$$$F$O!"0J2<; 2>H: **multiple keys (p. 140)**! #

G[CV$N; EAH$_$rM}2r$?$a$N: G$b=EMW$J3 5G0$O!"%0%i%UNN0h!"$9$J$o$AFb$+3 0$+$H$$$&$3$H$H!"%0%i%UNN0h$N6-3&$H$N4V$NM>Gr (margin) $r9M$($k$3$H$G$9! #%0%i%UNN0h$K1h$C$F!"%-!<%o!<%I **left/center/right** (l/c/r) $H **top/center/bottom** (t/c/b) $O!"K^Nc (key) $r$=$NNN0h$NFbB&$N$I$3$KCV$/$+$r@)8 f$7$^$9! #

%b!<%I **inside** $G$O!"K^Nc$O%-!<%o!<%I **left** (l), **right** (r), **top** (t), **bottom** (b), **center** (c) $K$h$C$F0J2<$N ?^$N$h$&$KI A2hNN0h$N6-3&$K8~$+$C$F=PNO$5$1$^$9:

```
t/l   t/c   t/r

c/l    c    c/r
```

```
    b/l   b/c   b/r
```

%b!<%I **outside** $G$b>e$HF1MM$K<+F0E*$KG[CV$5$l$^$9$,!"%0%i%UNN0h$N6-3&$KBP$7$F!"$H$$$&$h$j$b$`$7$m8+$?L\$KBP$7$F!"$H$$$&$Y$-$G$7$g$&!#$9$J$o$A!"%0%i%U$N6-3&$O!"%0%i%UNN0h$N30$NK^Nc$N>l=j$r:n$k$?$a$K!"FbB&$K0\F0$9$k$3$H$K$J$j$^$9!#$7$+$7!"$3$l$OB>$N%i%Y%k$N<YKb$r$7$^$9$7!"$b$7$+$7$?$i=PNO%G%P%$%9$K$h$C$F$O% (%i!<$r0z$-5/$3$9$+$b$7$l$^$;$s!#K^Nc$N=PNO$K9g$o$;$F$I$NIA2h6-3&$,0\F0$9$k$+$O!">e$K=R$Y$?K^Nc$N0LCV!"$*$h$S=E$M>e$2$NJ}8~$K0MB8$7$^$9!#4 J}8~$NCf?4B7$ ($N%*%W%7%g%s (**center**) $K4X$7$F$O!"$I$N6-3&$,F0$/$N$+$K4X$9$k$"$$$^$$$5$O$"$j$^$;$s$,!"3Q$X$N=PNO$N%*%W%7%g%s$K$D$$$F$O!"=E$M>e$2J}8~$, **vertical** $N>l9g$O:8$^$?$O1&$N6-3&$,!"**horizontal** $N>l9g$O>e$^$?$O2<$N6-3&$,!"$=$l$>$lFbB&$KE,@Z$K0\F0$7$^$9!#

M>Gr (margin) $N=q$-J}$O!"=E$M>e$2$NJ}8~$K$+$+$o$J$$<+F0E*$JG[CV$r2DG=$K$7$F$$$^$9!#**lmargin** (lm), **rmargin** (rm), **tmargin** (tm), **bmargin** (bm) $N$&$A$N0l$D$r!"L7=b$7$J$$ 1 J}8~$N%-!<%o!<%I$HAH$_9g$o$;$F;HMQ$7$?>l9g!"0J2<$N?^$K< ($7$?>l=j$KK^Nc$,G[CV$5$l$^$9:

```
         l/tm  c/tm  r/tm

    t/lm                  t/rm

    c/lm                  c/rm

    b/lm                  b/rm

         l/bm  c/bm  r/bm
```

%-!<%o!<%I **above** $H **over** $O **tmargin** $HF1$80UL#$G$9!#0JA0$N%P!<%8%g%s$H$N8_49@-$N$?$a$K!"**above** $H **over** $O l/c/r $d=E$M>e$2J}8~$N%-!<%o!<%I$J$7$G;HMQ$9$k$H!"**center** $G **horizontal** $r;H$$$^$9!#%-!<%o!<%I **below** $H **under** $O **bmargin** $HF1$80UL#$G$9!#8_49@-$N$?$a$K!"**below** $H **under** $O l/c/r $d=E$M>e$2J}8~$N%-!<%o!<%I$J$7$G;HMQ$9$k$H **center** $G **horizontal** $r;H$$$^$9!#$5$i$K!"**outside** $b8_49@-$N$?$a$K t/b/c $d=E$M>e$2J}8~$N%-!<%o!<%I$,$J$1$l$P!"**top**, **right**, **vertical** ($D$^$j>e$N t/rm $HF1$8) $r;HMQ$7$^$9!#

K^Nc$N0LCV (<position>) $O!"0JA0$N%P!<%8%g%s$HF1MMC1$K x,y,z $r;XDj$7$F$b$$$$$G$9$,!"$=$N:G=i$N%5%s%W%k9T$N:BI8$N:BI=7O$rA*Br$9$k$?$a$N 5 $D$N%-!<%o!<%I (**first**, **second**, **graph**, **screen**, **character**) $rF,$K$D$1$k$3$H$b$G$-$^$9!#>\:Y$O!"0J2<;2>H: **coordinates (p. 26)**!#<position> $,M?$ ($i$l$?>l9g$N **left**, **right**, **top**, **bottom**, **center** $N8z2L$O!"label %3%^%s%I$GG[CV$5$l$kJ8;zNs$N>l9g$HF1$8$h$&$K4p=`0LCV$N0LCVB7$ ($K;HMQ$5$l$^$9!#$9$J$o$A!"**left** $OK^Nc$, <position> $N1&$KCV$+$l$F:89g$o$;$G=PNO$5$l$^$9!#B>$N>l9g$bF1MM$G$9!#

### K^Nc$N%5%s%W%k (key samples)

%G%U%)%k%H$G$O!"%0%i%U>e$N3FIA2h$OK^Nc (key) Fb$K$=$l$>$l$KBP1~$9$k% (%s%H%j$r@8@.$7$^$9!#$3$N% (%s%H%j$K$O!"IA2h%?%$%H%k$H!"$=$NIA2h$G;H$o$l$k$N$HF1$8?'!"F1$8EI$j$D$V$7B0@-$K$h$k@~/E@/H" $N%5%s%W%k$,F~$j$^$9!#font $H textcolor B0@-$O!"K^NcFb$K8=$o$l$k8D!9$NIA2h%?%$%H%k$N8+$?L\$r@)8f$7$^$9!#textcolor $r "variable" $K%;%C%H$9$k$H!"K^Nc$N3F% (%s%H%j$NJ8;zNs$O!"IA2h%0%i%U$N@~$dEI$j$D$V$7?'$HF1$8?'$K$J$j$^$9!#$3$l$O!"0JA0$N$"$k;~4 |$N gnuplot $N%G%U%)%k%H$N5sF0$G$7$?!#

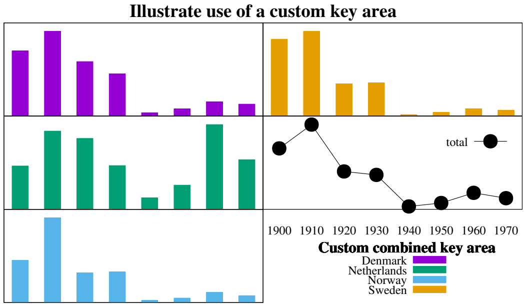
%0%i%U6J@~$N%5%s%W%k$N@~J,$ND9$5$O **samplen** $G;XDj$G$-$^$9!#$=$ND9$5$OL\@9$j$ND9$5$H!" <sample_length>*(J8;zI}) $NOB$H$7$F7W;;$5$l$^$9!#**sapmlen** $O!"%0%i%U>e$NE@$N%5%s%W%k$N0LCV$K$b ($b$7%5%s%W%k@~J,<+?H$,=q$+$l$J$/$F$b) 1F6A$rM?$ ($F$$$^$9!#$=$l$O!"E@$N5-9f$O%5%s%W%k@~J,$NCf1{$K=q$+$l$k$?$a$G$9!#

K^Nc$N%Y!<%9%i%$%s4V3V$O!"8=:_$N%U%)%s%H%5%$%:$KBP$9$k!V1 9T6u$-!W (single space) $K$J$C$F$$$^$9!#$3$l$O **set key spacing <line-spacing>** $GJQ99$G$-$^$9!#

<width_increment> $O!"J8;zNs$ND9$5$K2C$ ($?$j8:$i$7$?$j$9$kI} (2?J8;zJ,$+) $rI=$9?tCM$G$9!#$3$l$O!"K^Nc$K30OH$r=q$-!"J8;zNs$K@)8fJ8;z$r;H$&>l9g$K$@$1M-MQ$G$7$g$&!#**gnuplot** $O30OH$NI}$r7W;;$9$k$H$-$O!"%i%Y%kJ8;zNs$NJ8;z?t$rC1=c$K?t$ ($k$@$1$J$N$G!"$=$l$r=$@5$9$k$N$K;H$ ($^$9!#

### J#?t$NK^Nc$N=8Ls (multiple keys)

3F%0%i%U$N%?%$%H%k$r!"$9$Y$F<+F0E*$K@8@.$5$1$kK^Nc (key) Fb$KI=<($5$;$kBe$o$j$K!"I=Bj$dK^Nc$r<jF0$GG[CV$9$k$3$H$,$G$-$^$9!#$3$1$K$h$j!"Nc$($PB?=EIA2h%b!<%I (multiplot) $G$N3F%0%i%UMWAG$KBP$9$kI=Bj$r1 2U=j$K=8Ls$7$F:n$k$3$H$,$G$-$k$h$&$K$J$j$^$9!#0J2<$O$=$N0lNc:



```
set multiplot layout 3,2 columnsfirst
set style data boxes
plot $D using 0:6  lt 1 title at 0.75, 0.20
plot $D using 0:12 lt 2 title at 0.75, 0.17
plot $D using 0:13 lt 3 title at 0.75, 0.14
plot $D using 0:14 lt 4 title at 0.75, 0.11
set label 1 at screen 0.75, screen 0.22 "Custom combined key area"
plot $D using 0:($6+$12+$13+$14) with linespoints title "total"
unset multiplot
```

## %i%Y%k (label)

**set label** %3%^%s%I$r;H$&$3$H$K$h$C$FG$0U$N8+=P$7 (label) $r%0%i%UCf$KI=<($9$k$3$H$,$G$-$^$9!#

=q<0:

```
set label {<tag>} {"<label text>"} {at <position>}
          {left | center | right}
          {norotate | rotate {by <degrees>}}
          {font "<name>{,<size>}"}
          {noenhanced}
          {front | back}
          {textcolor <colorspec>}
          {point <pointstyle> | nopoint}
          {offset <offset>}
          {boxed}
          {hypertext}
unset label {<tag>}
show label
```

0LCV (<position>) $Ox,y $+x,y,z $N$I$A$i$+$G;XDj$7!":BI87O$r;XDj$9$k$K$O$=$N:BI8$NA0$K **first**, **second**, **polar**, **graph**, **screen**, **character** $r$D$1$^$9!#>\:Y$O!"0J2<;2>H: **coordinates (p. 26)**!#

%?%0 (<tag>) $O8+=P$7$r<1JL$9$k$?$a$N@0?tCM$G$9!#%?%0$r;XDj$7$J$+$C$?>l9gL$;HMQ$N$b$N$G:G$b>.$5$$CM$,<+F0E*$K3d$jEv$F$i$1$^$9!#8=:_$N8+=P$7$rJQ99$9$k$H$-$O$=$N%?%0$HJQ99$7$?$$9`L\$r;XDj$7$F **set label** %3%^%s%I$r;H$$$^$9!#

<label text> $OJ8;zNsDj?t$G$b9=$$$^$;$s$7!"J8;zNsJQ?t!"$^$?$OJ8;zNs$NCM$r;}$D<0$G$b9=$$$^$;$s!#0J2<;2>H: **strings (p. 47)**, **sprintf (p. 32)**, **gprintf (p. 131)**!#

%G%U%)%k%H$G$O!";XDj$7$?E@x,y,z $K8+=P$7$NJ8>O$N:8C<$,Mh$k$h$&$KG[CV$5$1$^$9!#x,y,z $r8+=P$7$N$I$3$KB7$($k$+$rJQ99$9$k$K$OJQ?t <justification> $r;XDj$7$^$9!#$3$1$K$O!"**left**, **right**, **center** $N$$$:$1$+$,;XDj$G$-!"$=$1$>$lJ8>O$N:8!"1&!"?^Cf$,;XDj$7$?E@$KMh$k$h$&$KG[CV$5$k$h$&$K$J$j$^$9!#IA2hHO0O$N30$K$O$_=P$k$h$&$J;XDj$b5v$5$1$^$9$,!":BI8<4$N8+=P$7$dB>$NJ8;zNs$H=E$J$k>l9g$,$"$j$^$9!#

H"OHIU$-$N%i%Y%k$r%5%]!<%H$9$k=PNO7A<0$b$"$j$^$9!#0J2<;2>H: **set style textbox (p. 176)**!#2sE>$5$;$?J8;zNs$NH"IU$1$O!"$9$Y$F$N=PNO7A<0$,2DG=$J$o$1$G$O$"$j$^$;$s!#

**rotate** $r;XDj$9$k$H%i%Y%k$O=D=q$-$K$J$j$^$9!#**rotate by <degrees>** $r;XDj$9$k$H!"J8;zNs$N%Y!<%9%i%$%s$r;XDj$7$?3Q$K@_Dj$7$^$9!#$?$@$7!"J8;zNs$N2sE>$r%5%]!<%H$7$F$$$J$$=PNO7A<0$b$"$j$^$9!#

%U%)%s%H$H$=$N%5%$%:$O!"=PNO7A<0$,%U%)%s%H$N@_Dj$r%5%]!<%H$7$F$$$1$P **font "<name>{,<size>}"** $GL@<(E*$KA*Br$G$-$^$9!#$=$&$G$J$$=PNO7A<0$G$O!"%G%U%)%k%H$N%U%)%s%H$,;H$o$1$^$9!#

DL>o$O!"8=:_$N=PNO7A<0$,%5%]!<%H$7$F$$$1$P!"%i%Y%kJ8;zNs$NA4$F$NJ8;zNs$K3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $,;HMQ$5$1$^$9!#**noenhanced** $r;HMQ$9$k$3$H$G!"FCDj$N%i%Y%k$r3HD%J8;zNs=hM}$+$i30$9$3$H$,

$G$-$^$9! #$3$l$O! "%i%Y%k$,Nc$ ($P% "%s%@! <%9%3% "(_) $r4^$s$G$$$k>l9g$J$I$KM-MQ$G$9! #0J2<; 2>H: **enhanced text (p. 27)**! #

**front** $,M?$ ($i$l$k$H! "8+=P$7$O%G! <%?$N%0%i%U$N>e$K=q$+$l$^$9! #**back** $,M?$ ($i$l$k$H (%G%U%)%k%H)! "8+=P$7$O%0%i%U$N2<$K=q$+$l$^$9! #**front** $r; H$&$3$H$G! "L)$J%G! <%?$K$h$C$F8+=P$7$,1#$5$l$F$7$^$&$3$H$rHr$1$k$3$H$,=PMh$^$9! #

**textcolor <colorspec>** $O8+=P$7J8; zNs$N?'$rJQ99$7$^$9! #<colorspec> $O@~<o! "rgb ?'! "$^$?$O%Q%l%C%H$X$N3dEv$N$$$:$l$+$,; XDj$G$-$^$9! #0J2<; 2>H: **colorspec (p. 41)**, **palette (p. 161)**! #**textcolor** $O! "**tc** $H>JN,2DG=$G$9! #

- `'tc default'` $O! "J8; z?'$r%G%U%)%k%H$K$7$^$9! #
- `'tc lt <n>'` $O! "J8; z?'$r@~<o `<n>` `(line type)` $HF1$8$b$N$K$7$^$9! #
- `'tc ls <n>'` $O! "J8; z?'$r `line style <n>` $HF1$8$b$N$K$7$^$9! #
- `'tc palette z'` $O! "8+=P$7$N `z` $N0LCV$KBP1~$7$?%Q%l%C%H?'$K$J$j$^$9! #
- `'tc palette cb <val>'` $O! "?'8+K\ `(colorbar)` $N `<val>` $N?'$K$J$j$^$9! #
- `'tc palette fraction <val>'` `(0<=val<=1)` $O! "`[0:1]` $+$i `'palette'` $N3%?'3,D4/%+%i! <$X$N<IA|$KBP1~$7$??'$K$J$j$^$9! #
- `'tc rgb "#RRGGBB"'`, `'tc rgb "0xRRGGBB"'` $O! "G$0U$N `24-bit RGB` ?'$r@_Dj$7$^$9! #
- `'tc rgb 0xRRGGBB'` $bF1$8$G$9 `(16` ?JDj?tCM$K$O0zMQId$OITMW)! #

<pointstyle> $,%-! <%o! <%I **lt**, **pt**, **ps** $H$H$b$KM?$ ($i$l$k$H (0J2<; 2>H: **style (p. 106)**)! "M?$ ($i$l$?%9%?%$%k$H! "M?$ ($i$l$?@~<o$N?'$G8+=P$70LCV$KE@ (point) $,IA2h$5$l! "8+=P$7J8; zNs$O>/$70\F0$5$l$^$9! #$3$N%*%W%7%g%s$O **mouse** 3HD%$5$l$?=PNO7A<0$G$N%i%Y%k$NG[CV$K! "%G%U%)%k%H$G; HMQ$5$l$F$$$^$9! #8+=P$7J8; zNs6a$/$NE@$NIA2h5 !G=$r **off** ($3$l$,%G%U%)%k%H) $K$9$k$K$O! "**nopoint** $r; HMQ$7$F$/$@$5$$! #

$=$N0\F0$O! "%G%U%)%k%H$G$O! "<pointstyle> $,M?$ ($i$l$l$P **pointsize** $NC10L$G 1,1 $G! "<pointstyle> $,M?$ ($i$l$F$$$J$1$l$P 0,0 $G$9! #0\F0$O! "DI2C$N **offset <offset>** $G$b@)8f$G$-$^$9! #$3$3$G! "<offset> $O x,y $+$^$?$O x,y,z $N7A<0$G$9$,! "$=$l$K:BI87O$rA*Br$7$F! "$=$NA0$K **first**, **second**, **graph**, **screen**, **character** $N$$$:$l$+$r$D$1$k$3$H$b$G$-$^$9! #>\:Y$O! "0J2<; 2>H: **coordinates (p. 26)**! #

$b$70l$D ($"$k$$$O$=$l0J>e$N) <4$,; ~4V<4$G$"$k>l9g! ":BI8$O **timefmt** $N=q<0$K$7$?$,$C$F0zMQId$G0O$^$l$?J8; zNs$GM?$ ($kI,MW$,$"$j$^$9! #0J2<; 2>H: **set xdata (p. 184)**, **set timefmt (p. 180)**! #

**set label** $K4X$7$FM-8z$J%*%W%7%g%s$O! "IA2h%9%?%$%k **labels** $G$bM-8z$G$9! #0J2<; 2>H: **labels (p. 64)**! #$3$N>l9g! "**textcolor**, **rotate**, **pointsize** $NB0@-$N8e$m$K%-! <%o! <%I **variable** $r$D$1$F! "$=$l$i$r8GDjCM$G$J$$$h$&$K$9$k$3$H$,2DG=$G$9! #$=$N>l9g8D! 9$N%i%Y%k$NBP1~$9$kB0@-CM$O! "**using** ;XDj$NDI2CNs$K$h$j7hDj$7$^$9! #

## Examples

Nc:

(1,2) $N0LCV$K "y=x" $H=q$/>l9g:

```
set label "y=x" at 1,2
```

Symbol %U%)%s%H$N%5%$%: 24 $N "%7%0%^" (&2) $r%0%i%U$N??C f$K=q$/>l9g:

```
set label "S" at graph 0.5,0.5 center font "Symbol,24"
```

8+=P$7 "y=x^2" $N1&C<$, (2,3,4) $KMh$k$h$&$K$7! "%?%0HV9f$H$7$F 3 $r; H$&>l9g:

```
set label 3 "y=x^2" at 2,3,4 right
```

$=$N8+=P$7$rCf1{B7$ ($K$9$k>l9g:

```
set label 3 center
```

%?%0HV9f 2 $N8+=P$7$r:o=|$9$k>l9g:

```
unset label 2
```

A4$F$N8+=P$7$r:o=|$9$k>l9g:

```
unset label
```

A4$F$N8+=P$7$r%?%0HV9f=g$KI=<($9$k>l9g:

```
show label
```

x <4$,;~4V<4$G$"$k%0%i%U$K8+=P$7$r@_Dj$9$kNc:

```
set timefmt "%d/%m/%y,%H:%M"
set label "Harvest" at "25/8/93",1
```

%G!<%?$H!"?7$?$KEv$F$O$a$i$l$?%Q%i%a!<%?$K$h$kEv$F$O$a4X?t$rI A2h$7$?$$>l9g!"**fit** $N8e$G$+$D **plot** $NA0$K0J2<$r<B9T$7$^$9:

```
set label sprintf("a = %3.5g",par_a) at 30,15
bfit = gprintf("b = %s*10^%S",par_b)
set label bfit at 30,20
```

Ev$F$O$a$i$l$k%Q%i%a!<%?$N$D$$$?4X?t$NDj5A<0$rI=<($7$?$$>l9g:

```
f(x)=a+b*x
fit f(x) 'datafile' via a,b
set label GPFUN_f at graph .05,.95
set label sprintf("a = %g", a) at graph .05,.90
set label sprintf("b = %g", b) at graph .05,.85
```

8+=P$7J8;zNs$r>.$5$$E@$+$i>/$7$@$10\F0$9$k>l9g:

```
set label 'origin' at 0,0 point lt 1 pt 2 ps 3 offset 1,-1
```

pm3d $r;H$C$?3<!855$N%+%i!<6JLL>e$N$"$kE@$N0LCV$K!"$=$Nz $NCM($3$N>l9g 5.5) $KBP1~$7$??'$r8+=P$7J8;zNs$K$D$1$k>l9g:

```
set label 'text' at 0,0,5.5 tc palette z
```

### %O%$%Q!<%F%-%9%H (hypertext)

=PNO7A<0$NCf$K$O (wxt, qt, svg, canvas, win) %0%i%U>e$NFCDj$N0LCV$d%-%c%s%P%9Fb$N$=$NB>$NItJ,$K%O%$%Q!<%F%-%9%H$rE=$jIU$1$k$3$H$,$G$-$k$b$N$,$"$j$^$9!#%^%&%9$r$=$N>l=j$K;}$C$F$$$/$H!"J8;zNs$r4^$`H"$,%]%C%W%"%C%W$5$l$^$9$,!"%O%$%Q!<%F%-%9%H$r%5%]!<%H$7$J$$=PNO7A<0$G$O!"$=$l$O2?$bI=<($7$^$;$s!#%O%$%Q!<%F%-%9%H$rE=$jIU$1$k$K$O!"$=$N%i%Y%k$N **point** B0@-$rM-8z$K$9$kI,MW$,$"$j$^$9!#Nc:

```
set label at 0,0 "Plot origin" hypertext point pt 1
plot 'data' using 1:2:0 with labels hypertext point pt 7 \
     title 'mouse over point to see its order in data set'
```

;n83CJ3,$N5!G=(;EMM$N:Y$+$$ItJ,$OJQ99$N2DG=@-$"$j): "image{<xsize>,<ysize>}:<filename>{\n<caption text>}" $N7A<0$NJ8;zNs$O%]%C%W%"%C%W%\%C%/%9Fb$G2hA|%U%!%$%k$rI=<($5$;$k$h$&$K$7$^$9!#%5%$%:;XDj$K$h$j%G%U%)%k%H$N%5%$%: 300x200 $rJQ99$G$-$^$9!#G'<1$9$k2hA|%U%!%$%k$N7?$O=PNO7A<0$K$h$C$F0c$$$^$9$,!"*.png $O>o$K OK $G$9!#2hA|%U%!%$%kL>$N8e$m$K=q$$$?J8;zNs$O!"DL>o$N%O%$%Q!<%F%-%9%H$HF1MM$KI=<($7$^$9!#

## @~<o (linetype)

%3%^%s%I **set linetype** $O3F<oIA2h$K;HMQ$5$l$k4pK\E*$J@~<o (linetype) $r:FDj5A$9$k$3$H$r2DG=$K$7$^$9!#$3$N%3%^%s%I$N%*%W%7%g%s$O!""set style line" $N$b$N$HA4$/F1$8$G$9!#%i%$%s%9%?%$%k$H0c$&$H$3$m$O!"**set linetype** $K$h$k:FDj5A$O1JB3E*$J$3$H$G!"$3$l$O **reset** $N1F6A$r<u$1$^$;$s!#

Nc$($P!"@~<o 1 $H 2 $r0J2<$N$h$&$K:FDj5A$7$F$_$^$9:

```
set linetype 1 lw 2 lc rgb "blue" pointtype 6
set linetype 2 lw 2 lc rgb "forest-green" pointtype 8
```

$9$k$H!"$=$l$i$N@~<o$N:G=i$N8+$?L\$,$I$&$G$"$C$?$+$K4X$o$i$:!"lt 1 $r;HMQ$7$F$$$k$9$Y$F$N$b$N$,!"$=$N8e$OB@$$@D@~$K$J$j$^$9!#$3$N@-<A$O!"lt 1 $K$h$C$F:n$i$l$?0l;~E*$J%i%$%s%9%?%$%k$ND j5A$N$h$&$J$b$N$K$bE,MQ$5$l$^$9!#F1MM$K!"@~<o 2 $O!"$=$N8e$OB@$$NP@~$K$J$j$^$9!#

$3$N;EAH$_$O!"gnuplot $G;HMQ$9$k@~<cNs$KBP$9$k8D?ME*$J9%$_$r@_Dj$9$k$N$K$b;H$($^$9!#$=$l$r9T$&$K$O!"<B9T;~=i4|2=%U%!%$%k ~/.gnuplot $K!"Nc$($P0J2<$N$h$&$J$=$lMQ$N%3%^%s%INs$rDI2C$9$k$3$H$r$*4+$a$7$^$9:

```
set linetype 1 lc rgb "dark-violet" lw 2 pt 1
set linetype 2 lc rgb "sea-green"   lw 2 pt 7
set linetype 3 lc rgb "cyan"        lw 2 pt 6 pi -1
set linetype 4 lc rgb "dark-red"    lw 2 pt 5 pi -1
set linetype 5 lc rgb "blue"        lw 2 pt 8
set linetype 6 lc rgb "dark-orange" lw 2 pt 3
set linetype 7 lc rgb "black"       lw 2 pt 11
set linetype 8 lc rgb "goldenrod"   lw 2
set linetype cycle 8
```

$3$&$9$k$H!"$"$J$?$, gnuplot $r<B9T$9$kEY$K@~<o$O$3$1$i$NCM$K=i4|2=$5$1$^$9!#@~<o$O$"$J$?$,9%$`?t$@$1=i4|2=$G$-$^$9!#:FDj5A$7$J$$>19g$O!"$=$1$O%G%U%)%k%H$NB0@-$r;}$AB3$1$^$9!#Nc$($P@~<o 3 $r:FDj5A$+$i3 0$;$P!"$=$1$O@D$G pt 3, lw 1 $H$J$j$^$9!#$J$*!"%5%s%W%k%9%/%j%W%H$N:G=i$N 2,3 $N9T$O!"8E$$%P!<%8%g%s$N gnuplot $G$O%9%-%C%W$5$;$k$?$a$NJ]81$G$9!#

F1MM$N%9%/%j%W%H%U%!%$%k$G!"%F!<%^%Y!<%9$N?'A*Br$ND j5A$r9T$C$?$j!"FCD j$NIA2h%?%$%W!"$"$k$$$OFCD j$N=PNO7A<0MQ$K?'$r%+%9%?%^%$%:$7$?$j$9$k$3$H$b2DG=$G$9!#

%3%^%s%I **set linetype cycle 8** $O!"Bg$-$JHV9f$N@~<o$KBP$7$F$O?'$d@~I}$K4X$9$k$3$1$i$ND j5A$r:FMxMQ$9$k$3$H$r gnuplot $KEA$($^$9!#$9$J$o$A!"@~<o (linetype) 9-16, 17-24 Ey$KBP$7$F$O!"$3$1$HF1$8?'!"I}$NNs$r;HMQ$7$^$9!#$?$@$7!"E@$NB0@- (pointtype, pointsize, pointinterval) $O!"$3$N%3%^%s%I$N1F6A$O<u$1$^$;$s!# **unset linetype cycle** $O$3$N5!G=$rL58z$K$7$^$9!#Bg$-$J@~<oHV9f$N@~$NB0@-$rL@<(E*$KD j5A$7$?>19g$O!"$=$1$O>.$5$$HV9f$N@~<o$NB0@-$N:FMxMQ$h$j$bM%@h$5$1$^$9!#

## Bh **2** <4$H$NBP1~ **(link)**

=q<0:

```
set link {x2 | y2} {via <expression1> inverse <expression2>}
unset link
```

%3%^%s%I **set link** $O!"x <4$H x2 <4!"$^$?$O y <4$H y2 <4$N4V$NBP1~$r@_D j$7$^$9!#<expression1> $O!"Bh 1 <4$N:BI8$rBh 2 <4$K<IA|$9$k?t<0$G$9$,!"<expression2> $OBh 2 <4$N:BI8$rBh 1 <4$K<IA|$9$k?t<0$G$9!#

Nc:

```
set link x2
```

$3$1$O!"$3$N%3%^%s%I$N:G$bC1=c$J7A<0$G!"x2 <4$rHO0O (range) $b?-=L (scale) $bJ}8~$b x <4$HA4$/F1$8$K$7$^$9!# **set xrange**, **set x2range** $d **set auto x** $J$I$N%3%^%s%I$O!"$3$N>19g x <4$K$b x2 <4$K$b:nMQ$7$^$9!#

```
set link x2 via x**2 inverse sqrt(x)
plot "sqrt_data" using 1:2 axes x2y1, "linear_data" using 1:2 axes x1y1
```

$3$N%3%^%s%I$O!"x <4$H x2 <4$N!"=gJ}8~$H5UJ}8~$NBP1~$r@_D j$7$F$$$^$9!#=gJ}8~$NBP1~$O!"x2 <4$N9o$_%i%Y%k$H!"%^%&%9$N x2 :BI8$r@8@.$9$k$N$K;H$$!"5UJ}8~$NBP1~$O!"x2 <47O$G;XD j$5$1$?:BI8$rIA2h$9$k$N$K;H$$$^$9!#$3$NBP1~$O!"HsI i$N x :BI8$K$N$_M-8z$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#y2 <4$KBP1~$5$;$?>19g!"<expression1> $H <expression2> $K$O2>JQ?t$H$7$F y $r;H$&I,MW$,$"$j$^$9!#

## Lmargin

%3%^%s%I **set lmargin** $O:8$NM>Gr$N%5%$%:$r%;%C%H$7$^$9!#>\:Y$O!"0J2<;2>H: **set margin (p. 146)**!#

## FI$_9~$_8!:w%Q%9 **(loadpath)**

**loadpath** $N@_D j$O!"**call**, **load**, **plot**, **splot** %3%^%s%I$N%G!<%?%U%!%$%k!"%3%^%s%I%U%!%$%k$N8!:w%Q%9$rDI 2CD j5A$7$^$9!#%U%!%$%k$,8=:_$N%G%#%l%/%H%j$K8+$D$+$i$J$+$C$?>19g!"**loadpath** $N%G%#%l%/%H%j$,8!:w$5$1$^$9!#

=q<0:

```
set loadpath {"pathlist1" {"pathlist2"...}}
show loadpath
```

%Q%9L>$OC10 1$N%G%#%1%/%H%jL>!"$^$?$OJ#?t$N%Q%9L>$N%j%9%H$H$7$FF~NO$7$^$9!#J#?t$N%Q%9$+$i$J$k%Q%9%j%9%H$O OS 8GM-$N%Q%96h@Z$j!"Nc$($P Unix $G$O%3%m%s (':'), MS-DOS, Windows, OS/2 $G$O%;%_%3%m%s (';') Ey$G6h@Z$j$^$9!#**show loadpath**, **save**, **save set** %3%^%s%I$O!"OS 8GM-$N%Q%96h@Z$j$r%9%Z!<%9 (' ') $GCV$-49$($^$9!#

4D6-JQ?t GNUPLOT_LIB $,@_Dj$5$l$F$$$k>l9g!"$=$NFbMF$O **loadpath** $KDI2C$5$l$^$9$,!"**show loadpath** $O!"**set loadpath** $H GNUPLOT_LIB $NCM$rJL!9$KI=<($7$^$9$7!"**save**, **save set** %3%^%s%I$O!"GNUPLOT_LIB $NCM$NJ}$OL5;k$7$^$9!#

## %m%1!<%k (locale)

**locale** $N@_Dj$O **{x,y,z}{d,m}tics** $,=q$/F|IU$N8@8l$r7hDj$7$^$9!#

=q<0:

```
set locale {"<locale>"}
```

<locale> $K$O%$%s%9%H!<%k$5$l$?%7%9%F%`$G;H$&$3$H$N=PMh$kG$0U$N8@8l$r;XDj$G$-$^$9!#2DG=$J%*%W%7%g%s$K$D$$$F$O%7%9%F%`$N%I%-%e%a%s%H$r;2>H$7$F$/$@$5$$!#%3%^%s%I **set locale ""** $O!"4D6-JQ?t LC_TIME, LC_ALL, $^$?$O LANG $+$i%m%+!<%k$NCM$r7hDj$7$h$&$H$7$^$9!#

> .?tE@$K4X$9$k locale $rJQ99$7$?$$>l9g$O!"0J2<;2>H: **set decimalsign (p. 125)**!#J8;z%(%s%3!<%I$r8=:_$N%m%+!<%k$N$b$N$KJQ99$7$?$$>l9g$O!"0J2<;2>H:**set encoding (p. 128)**!#

## BP?t<4 (logscale)

=q<0:

```
set logscale <axes> {<base>}
unset logscale <axes>
show logscale
```

$3$3$G!"<axes> (<4) $O!"**x**, **x2**, **y**, **y2**, **z**, **cb**, **r** $NG$0U$N=g=x$NAH$_9g$;$,2DG=$G$9!#<base> $O!"BP?tL\@9$j$ND1$G$9 (%G%U%)%k%H$ND1$O 10)!#<4$r;XDj$7$J$+$C$?>l9g$O!"**r** 0J30$N$9$Y$F$N<4$,BP>]$H$J$j$^$9!#%3%^%s%I **unset logscale** $O!"$9$Y$F$N<4$NBP?tL\@9$j$r2r=|$7$^$9!#BP?t<4$KBP$7$F$D$1$i$l$kL\@9$j$N9o$_$O!"Ey4V3V$G$O$J$$$3$H$KCm0U$7$F$/$@$5$$!#0J2<;2>H: **set xtics (p. 187)**!#

Nc:

x, z N><4$K$D$$$FBP?tL\@9$j$r@_Dj$9$k:

```
set logscale xz
```

y <4$K$D$$$FD1 2 $H$9$kBP?tL\@9$j$r@_Dj$9$k:

```
set logscale y 2
```

pm3d plot MQ$K z $H?'$N<4$KBP?tL\@9$j$r@_Dj$9$k:

```
set logscale zcb
```

z <4$NBP?tL\@9$j$r2r=|$9$k:

```
unset logscale z
```

## %^%/%m (macros)

8=:_$N%P!<%8%g%s$N gnuplot $G$O!"%^%/%mCV49$O>o$KM-8z$G$9!#%3%^%s%I%i%$%s$FCb$N @<stringvariablename> $N7A<0$NItJ,J8;zNs$O!"J8;zNsJQ?t <stringvariablename> $K4^$^$l$k%F%-%9%HJ8;zNs$KCV$-49$($i$l$^$9!# 0J2<;2>H: **substitution (p. 48)**!#

## 3 <!85:BI870 (mapping)

%G!<%?$, **splot** $K5eLL:BI8$d1_C1:BI8$GM?$($i$1$?>19g!"**set mapping** %3%^%s%I$O **gnuplot** $K$=$1$r$I$N$h$&$K07$&$+$r;XDj$9$k$N$K;H$o$1$^$9!#

=q<0:

```
set mapping {cartesian | spherical | cylindrical}
```

%G%U%)%k%H$G$O%+!<%F%7%"%s:BI8(DL>o$N x,y,z :BI8) $,;H$o$1$^$9!#

5eLL:BI8$G$O!"%G!<%?$O2 $D$+3 $D$NNs($^$?$O$=$N8D?t$N **using** %(%s%H%j) $H$7$FM?$($i$1$^$9!#:G=i$N2 $D$O!"**set angles** $G@_Dj$5$1$?C10L$G$NJ}0L3Q(theta) $H6D3Q(phi) ($9$J$o$A"7PEY" $H"0^EY") $H$_$J$5$1$^$9!#H>7Br $O!"$b$73 NsL\$N%G!<%?$,$"$1$P$=$1$,;H$o$1!"$b$7$J$1$1$P1 $K@_Dj$5$1$^$9!#3FJQ?t$N x,y,z $H$NBP1~$O0J2<$NDL$j$G$9:

```
x = r * cos(theta) * cos(phi)
y = r * sin(theta) * cos(phi)
z = r * sin(phi)
```

$3$1$O!""6K:BI87O" $H$$$&$h$j!"$'$7$m"CO3X>e$N:BI87O" (0^EY!"7PEY) $KAjEv$9$k$3$H$KCm0U$7$F$/$@$5$$($9$J$o$A!"phi $O z <4$H$J$93Q!"$H$$$&$h$j@VF;$+$i7W$C$?6D3Q!"$K$J$j$^$9)!#

1_C1:BI8$G$O!"%G!<%?$O$d$O$j2 $D$+3 $D$NNs$GM?$($i$1!":G=i$N2 $D$Otheta (**set angle** $G;XDj$5$1$?C10L$N) $H z $H8+$J$5$1$^$9!#H>7Br $O5eLL:BI8$N>19g$HF1MM!"3 NsL\$N%G!<%?$,$"$1$P$=$1$,!"$J$1$1$P1 $H@_Dj$5$1$^$9!#3FJQ?t$N x,y,z $H$NBP1~$O0J2<$NDL$j$G$9:

```
x = r * cos(theta)
y = r * sin(theta)
z = z
```

**mapping** $N8z2L$O!"**splot** %3%^%s%I>e$N **using** $K$h$k%U%#%k%?$G<B8=$9$k$3$H$b2DG=$G$9$,!"B?$/$N%G!<%?%U%!%$%k$,=hM}$5$1$k>19g$O **mapping** $NJ}$,JXMx$G$7$g$&!#$7$+$7!"**mapping** $r;H$C$F$$$F$b!"$b$7%U%!%$%k$N%G!<%?$N=gHV$,E,@Z$G$J$+$C$?$i7k6I **using** $,I,MW$K$J$C$F$7$^$$$^$9!#

**mapping** $O **plot** $G$O2?$b$7$^$;$s!#world.dem: mapping $N%G%b!#

## <~0O$NM>Gr (margin)

**margin** (<~0O$NM>Gr) $H$O!"IA2hNN0h$N6-3&$+$i%-%c%s%P%9$N01HV30B&$^$G$N4V3V$N$3$H$G$9!#$3$NM>Gr$NBg$-$5$O<+F0E*$K$H$i$1$^$9$,!"%3%^%s%I **set margin** $GJQ99$9$k$3$H$b$G$-$^$9!#**show margin** $O8=:_$N@_Dj$rI=<($7$^$9!#IA2hNN0h$N6-3&$+$iFbB&$NIA2hMWAG$^$G$N4V3V$rJQ99$7$?$$>19g$O0J2<;2>H: **set offsets (p. 156)**!#

=q<0:

```
set lmargin {{at screen} <margin>}
set rmargin {{at screen} <margin>}
set tmargin {{at screen} <margin>}
set bmargin {{at screen} <margin>}
set margins <left>, <right>, <bottom>, <top>
show margin
```

<margin> $N%G%U%)%k%H$NC10L$K$O!"E,@Z$H;W$o$1$k!"J8;z$N9b$5$HI}$,;H$o$1$^$9!#@5$NCM$OM>Gr$N@dBPE*$JBg$-$5$rDj5A$7!"Ii$NCM($^$?$OL5;XDj) $O **gnuplot** $K$h$C$F<+F07W;;$5$1$kCM$r;H$&$3$H$K$J$j$^$9!#3<!85IA2h$G$O:8$NM>Gr (lmargin) $N$_$,J8;z$NBg$-$5$rC10L$H$7$F@_Dj$G$-$^$9!#

%-!<%o!<%I **at screen** $O!"$=$NM>Gr$N;XDj$,A4BN$NIA2hNN0h$KBP$9$k3d9g$G$"$k$3$H$r0UL#$7$^$9!#$3$1$O!"B?=EIA2h (multiplot) %b!<%I$G$N 2D, 3D %0%i%U$N3Q$r@53N$KB7$($k$N$K;H$($^$9!#$3$NG[CV$O8=:_$N **set origin** $d$d **set size** $NCM$rL5;k$9$k$h$&$K$J$C$F$$$F!"$=$1$OB?=EIA2hFb$N%0%i%U$NG[CV$NJL$NJ}K!$H$7$F;H$o$1$k$3$H$r0U?^$7$F$$$^$9!#

IA2h$NM>Gr$ODL>oL\@9$j!"L\@9$j$N8+=P$7!"<4$N8+=P$7!"IA2h$N%?%$%H%k!"F|IU!"$=$7$F6-3&$N30$K$"$k>19g$NK^Nc(key) $N%5%$%:Ey$r85$K7W;;$5$1$^$9!#$7$+$7!"L\@9$j$N9o$_$,6-3&$G$J$/<4$NJ}$K$D$$$F$$$k>19g (Nc$($P **set xtics axis** $K$h$C$F)!"L\@9$j$N9o$_<+?H$H$=$N8+=P$7$OM>Gr$N7W;;$K$O4^$^$1$^$;$s$7!"M>Gr$K=q$+$1$kB>$NJ8;zNs$N0LCV$N7W;;$K$b4^$^$1$^$;$s!#$3$1$O!"<4$H6-3&$,Hs>o$K6a$$>19g!"<4$N8+=P$7$,B>$NJ8;zNs$r>e=q$-$9$k2DG=@-$r<(:6$7$^$9!#

## Micro

%G%U%)%k%H$G$O! "<4$N9o$_%i%Y%k$N@8@.$K;HMQ$9$k2J3X7O=PNO$N$?$a$N=q<0;XDj;R "%c" $O!"V%^%$%/%m!W(10^-6) $r<($9@\F,<-$H$7$F>.J8;z$N u $r;H$$$^$9! #%3%^%s%I **set micro** $O!"$=$1$H$OO [$J$k0u;zMQJ8;z (unicode U+00B5) $r;HMQ$9$k$h$& gnuplot $K;X<($7$^$9! #$=$NJ8;z$rI=8=$9$k$N$K;HMQ$5$1$k%P%$%HNs$O! "8=:_$N encoding $K0MB8$7$^$9! #0J2<;2>H: **format specifiers (p. 131)**, **encoding (p. 128)**! #

$3$N%3%^%s%I$O;n83CJ3,$N$b$N$G! "@)8B$,$"$j$^$9$7! ";EMM$N: Y$+$$ItJ,$OJQ99$9$k2DG=@-$,$"$j$^$9! #

## Minussign

gnuplot $O$[$H$s$I$N=q<0IU$-F~NO$O C 8@8l$N%i%$%V%i%j%k!<%A%s$G$"$k sprintf() $G=hM}$7$^$9! #$7$+$7! " gnuplot $K$OFH<+$N=q<02=%k!<%A%s **gprintf()** $b$"$j! "$=$1$O<4$N9o$_J8;zNs$N@8@.$K;H$o$1$F$$$^$9! #C $N %i%$%V%i%j%k!<%A%s$O!"-7 $N$h$&$JI i$N?t$NI=<($K$O>o$K%O%$%U%sJ8;z (ASCII \055) $r;HMQ$7$^$9$,!"$ `$7 $m$=$NL\E*$G$O!"$=$1$H$OO [$J$k0u;zMQ$N%^%$%J%9I d9 fJ8;z (Unicode U+2212) $r;H$$ ! ] 7 $N$h$&$KI=<($7 $?$$$HB?$/$N?M! 9$O;W$&$G$7$g$& (LuCm 8 6J8$G$O '7' $NA0$O Unicode $N!V%^%$%J%95-9f!W$,;H$o$1$F$$k$,!" $3$3$G$O JIS $NA43Q%^%$%J%95-9f 245D $rMQ$$?)! #%3%^%s%I

```
set minussign
```

$O!"gprintf() $N?t;z$N=PNO$K!"%O%$%U%s$NBe$o$j$K%^%$%J%9I d9 fJ8;z$r;HMQ$9$k$h$&;X<($7$^$9! #UTF-8 %m %1!<%k$G$O$=$1$O Unicode U+2212 $KBP1~$9$k%^%k%A%P%$%HJ8;zNs$K$J$j! "Window %3!<%I%Z!<%8 1252 %m %1!<%k$G$O!"$3$1$O 8 %S%C%HJ8;z$N ALT+150 ("en dash") $K$J$j$^$9! #%3%^%s%I **set minussign** $O!"<4$N 9o$_$N%i%Y%k$H!"gprintf $rL@<(E*$K8F$S=P$7$F@8@.$5$1$?J8;zNs$K1F6A$rM?$($^$9$,!"$=$NB>$N>l9g$N%O%$%U %s$r4^$`J8;zNs$K$O2?$i1F6A$rM?$($^$;$s! #0J2<;2>H: **gprintf (p. 131)**! #

LaTeX $O!"$=$1<+?H$,Ii$NId9f$r<+A0$G=hM}$9$k;EAH$_$r;}$C$F$$$k$?$a!"$3$N%3%^%s%I$O!"LaTeX 7O$N =PNO7A<0$r;HMQ$7$F$$$k>l9g$OL5;k$5$1$k$3$H$KCm0U$7$F$/$@$5$$! #postscript =PNO7A<0$r;HMQ$9$k>l9g$b!" gnuplot $Npostscript MQA0=hM}%k!<%A%s$, ascii $N%O%$%U%s%3!<%I \055 $r **minus** $H$$$&L>A0$NO [$J$kJ8;z$K JQ49$9$9$k$N$G!"$3$N%3%^%s%I$OI,MW$O$"$j$^$;$s! #

$3$N%3%^%s%I$O;n83CJ3,$N$b$N$G! "@)8B$,$"$j$^$9$7! ";EMM$N: Y$+$$ItJ,$OJQ99$9$k2DG=@-$,$"$j$^$9! #

Nc (utf8 %m%1!<%k$r2>Dj):

```
set minus
A = -5
print "A = ",A                 # %O%$%U%s$r4^$`J8;zNs$r=PNO
print gprintf("A = %g",A)      # U+2212 J8;z$r4^$`J8;zNs$r=PNO
set label "V = -5"             # %O%$%U%s$r4^$`%i%Y%k
set label sprintf("V = %g",-5) # %O%$%U%s$r4^$`%i%Y%k
set label gprintf("V = %g",-5) # U+2212 $r4^$`%i%Y%k
```

## Gr9u%b!<%I (monochrome)

=q<0:

```
set monochrome {linetype N <linetype properties>}
```

%3%^%s%I **set monochrome** $O!"@~<o72$NJL$N@_DjK!$rA*Br$7$^$9$,!"$=$1$O?'$N0c$$$G$O$J$/!"E@@~/GK @~%Q%?!<%s$d@~I}$N0c$$$K$h$k$b$N$G$9! #$3$N%3%^%s%I$O!"gnuplot $N0JA0$N%P!<%8%g%s$N$"$k=PNO7A<0$G monochrome %*%W%7%g%s$H$7$FDs6!$7$F$$$?$b$N$KCV$-49$($o$k$b$N$G! "8eJ}8_49@-$N$?$a!"$=$1$i$N=PNO7A<0 $G "mono" %*%W%7%g%s$r;XDj$9$k$H!"0EL [$G **set monochrome** $r8F$S=P$7$^$9! #Nc$($P!"

```
set terminal pdf mono
```

$O!"0J2<$HF1Ey$G$9! #

```
set terminal pdf
set mono
```

Gr9u%b!<%I (monochrome) $NA*Br$O!"L@<(E*$JRGB ?'!"%Q%l%C%H?'$r;HMQ$7$F$N%+%i!<$N@~$NIA2h$rK8$2$k $b$N$G$O$"$j$^$;$s$,!"0J2<$b;2>H set palette gray (p. 165)!#%G%U%)%k%H$G$O6 $D$NGr9u@~<o$,Dj5A$5$l $F$$$^$9$,!"$=$l$i$NB0@-$rJQ99$7$?$j!"Gr9u@~<o$rDI2C$9$k$3$H$O!"%U%k7A<0$G$=$N%3%^%s%I$r;HMQ$9$k$3 $H$G$G$-$^$9!#Gr9u@~<o$K$[$I$3$5$l$?JQ99$O!"%+%i!<$N@~<o$K$O1F6A$rM?$($^$;$s$7!"$=$N5U$bF1MM$G$9!# %+%i!<@~<o$KI|5"$9$k$K$O!"unset monochrome $+!"set color $H$7$F$/$@$5$$!#

## %^%&%9 (mouse)

%3%^%s%I set mouse $O!"8=:_$NBPOC7?=PNO7A<0$KBP$7$F%^%&%95 !G=$rM-8z$K$7$^$9!#BPOC7?%b!<%I$G$ODI>o %G%U%)%k%H$G$3$l$OM-8z$K$J$C$F$$$^$9$,!"%3%^%s%I$,%U%!%$%k$+$iF I$_9~$^$l$k>l9g$O%G%U%)%k%H$GL58z $K$J$C$F$$$^$9!#

%^%&%9%b!<%I$O2 <!N MQ0U$5$l$F$$$^$9!#2 <!85%b!<%I$O!"plot %3%^%s%I$H splot $N2 <!85<MlF($9$J$o$A!" z $N2sE>3Q$, 0, 90, 180, 270, 360 EY$N set view!"$*$h$S set view map) $GF0:n$7$^$9!#$3$N%b!<%I$G$O!" %^%&%90LCV$,DI@W$5$l!"%^%&%9%\%?%s$dLp0u%-!<$r;H$C$F3HBg$7$?$j;kE@0\F0$7$?$j$G$-$^$9!#%0%i%U$KBP1~ $9$kK^Nc$N%?%$%H%k$dJL$J%&%#%8%'%C%H%"%$%3%s$J$I$r%/%j%C%/$9$k$3$H$G!"8D!9$N%0%i%U$NIA2h$r%*%s/%*%U $K@Z$jBX$($k$3$H$r%5%]!<%H$9$k=PNO7A<0$b$"$j$^$9!#

splot $K$h$k3 <!85%0%i%U$KBP$7$F$O!"%0%i%U$N;kJ}8~(view) $H=L<\$NJQ99$,!"$=$l$>$l%^%&%9%\%?%s1 $H2 ($K$h$k%I%i%C%0) $G9T$($^$9!#%\%?%s2 $N?bD>J}8~$N%I%i%C%0$r shift %-!<$HF1;~$K9T$&$H!"z <4$N0lHV2<$N0L CV (xyplane) $r>e2<$7$^$9!#$3$l$i$N%\%?%s$K$5$i$K <ctrl> %-!<$r2!$9$H!":BI8<4$OI=<($5$l$^$9$,!"%G!< %?$NI=<($O>C$($^$9!#$3$l$OBg$-$J%G!<%?$KBP$7$FM-MQ$G$7$g$&!#%^%&%9%\%?%s3 $O!"z <4$N8~$-(azimuth) $r@)8f$7$^$9 (0J2<;2>H set view azimuth (p. 183))!#

%^%&%9$OB?=EIA2h (multiplot) %b!<%IFb$G$OL58z$G$9$,!"unset multiplot $GB?=EIA2h$,407k$9$l$P!"%^%&%9 5 !G=$O ON $K$J$j$^$9!#$?$@$7!"$=$N:nMQ$Omultiplot Fb$N:G8e$NIA2h (replot $GIA2h$5$l$k$h$&$J$b$N) $K BP$7$F$N$_$G$9!#

=q<0:

```
set mouse {doubleclick <ms>} {nodoubleclick}
          {{no}zoomcoordinates}
          {zoomfactors <xmultiplier>, <ymultiplier>}
          {noruler | ruler {at x,y}}
          {polardistance{deg|tan} | nopolardistance}
          {format <string>}
          {mouseformat <int>/<string>}
          {{no}labels {"labeloptions"}}
          {{no}zoomjump} {{no}verbose}
unset mouse
```

%*%W%7%g%s noruler $H ruler $O!"Dj5, (ruler) 5 !G=$r off, on $K$7$^$9!#ruler $K$O:BI8$rM?$($F86E@$r@_Dj $9$k$3$H$b$G$-$^$9!#ruler $,on $N4V!"ruler $N86E@$+$i%^%&%9$^$G$N%f!<%6C10L$G$N5wN%$,O"B3E*$KI=<($5 $l$^$9!#%G%U%)%k%H$G$O!"ruler $N%H%0%k%9%$%C%A$O 'r' $K%-!<3d$jEv$F$5$l$F$$$^$9!#

%*%W%7%g%s polardistance $O!"%^%&%9%+!<%=%k$+$iDj5, (ruler) $^$G$N5wN%$r6K:BI8$G$bI=<((5wN%!"$*$h$S 3QEY$^$?$O7 9$-) $9$k$+$I$&$+$r7hDj$7$^$9!#$3$l$O%G%U%)%k%H$N%-!<3d$jEv$F '5' $KBP1~$7$^$9!#

%\%?%s2 $Ngnuplot $NlJB3E*$J%i%Y%k$rDj5A$9$k$K$O!"%*%W%7%g%s labels $r;HMQ$7$^$9!#%G%U%)%k%H$O nolabels $G!"%\%?%s2 $OC1$K0l;~E*$J%i%Y%k$r%^%&%90LCV$KIA2h$7$^$9!#%i%Y%k$O8=:_$N mouseformat $N@_Dj$K=>$C $F=q$+$l$^$9!#labeloptions J8;zNs$O!"%3%^%s%I set label %3%^%s%I$KEO$5$l$^$9!#$=$N%G%U%)%k%H$O "point pointstyle 1" $G!"$3$l$O%i%Y%k0LCV$K>.$5$J%W%i%9 (+) $rIA2h$7$^$9!#0l;~E*$J%i%Y%k$O!"$=$N<!$N replot !" $^$?$O%^%&%9:!<'A':n$G$O8=$l$^$;$s!#lJB3E*$J%i%Y%k$O!"%i%Y%k$NE@$N>e$G Ctrl %-!<$r2!$7$F%\%?%s2 $r%/%j%C%/$9$k$3$H$G>C$9$3$H$,$G$-$^$9!#<B:]$N%i%Y%k$N0LCV$KI$10L6a$/$G%/%j%C%/$7$J$1$l$P$$$1$J$$ $+$NbgCM$b pointsize $G7hDj$5$l$^$9!#

%*%W%7%g%s verbose $, ON $N>l9g!"<B9T;~$NJs9p%3%^%s%I$,I=<($5$l$^$9!#$3$N%*%W%7%g%s$O%I%i%$%P%&%#%s %I%&>e$G 6 $rBG$D$3$H$G ON/OFF $,%9%$%C%A$G$-$^$9!#%G%U%)%k%H$G$O verbose $O OFF $K$J$C$F$$$^$9!#

%I%i%$%P%&%#%s%I%&>e$G 'h' $rBG$D$H!"%^%&%9$H%-!<3dEv$NC;$$@bL@$,I=<($5$l$^$9!#$3$l$O!"%f!<%6Dj5A$N %-!<3dEv!"$9$J$o$A bind %3%^%s%I$K$h$k hotkeys (0J2<;2>H bind (p. 44)) $bI=<($5$l$^$9!#%f!<%6Dj5A $N hotkeys $O%G%U%)%k%H$N%-!<3dEv$rL58z$K$7$^$9!#0J2<$b;2>H bind (p. 44), label (p. 141)!#

### Doubleclick

%@%V%k%/%j%C%/$N2rA|EY$O%_%jIC(ms) C10L$GM?$($^$9!#$3$l$O!"%\%?%s 1 MQ$N$b$N$G!"8=:_$N%^%&%90LCV$r %/%j%C%W%\!<%I (**clipboard**) $K%3%T!<$9$k$N$K;H$&=PNO7A<0$,$"$j$^$9!#%G%U%)%k%H$NCM$O 300 ms $G$9!#$3$l$r 0 ms $K@_Dj$9$k$H%7%s%0%k%/%j%C%/$G$=$N%3%T!<$r9T$&$h$&$K$J$j$^$9!#

### Mouseformat

%3%^%s%I **set mouse format** $O!"sprintf() $KBP$9$k=q<0J8;zNs$N;XDj$G!"%^%&%9%+!<%=%k$N [x,y] :BI8$rIA2h%&%#%s%I%&$H%/%j%C%W%\!<%I$K$I$N$h$&$KI=<($9$k$+$r7hDj$7$^$9!#%G%U%)%k%H$O "% #g" $G$9!#

**set mouse mouseformat** $O!"%\%?%s 1 $H%\%?%s 2 $N:nMQ;~(:BI8$r%/%j%C%W%\!<%I$X%3%T!<$7!"%^%&%90LCV$K0l;~E*$KCm<a$r$D$1$k) $NJ8;zNs$N=q<0MQ$K;H$o$l$^$9!#0z?t$,@0?t$N>l9g!"0J2<$NI=$K$"$k=q<0%*%W%7%g%s$N0l$D$rA*Br$7$^$9!#0z?t$,J8;zNs$N>l9g$O!"=q<0%*%W%7%g%s 6 $N sprintf() $N=q<0J8;zNs$H$7$F;H$o$l$^$9$N$G!"2 $D$N<B?t$N;XDj;R$r4^$`I,MW$,$"$j$^$9!#Nc:

`'set mouse mouseformat "mouse x,y = %5.2g, %10.3f"'.`

$3$NJ8;zNs$r$^$?%*%U$K$9$k$K$O!"**set mouse mouseformat** "" $H$7$^$9!#

0J2<$N=q<0$,MxMQ2DG=$G$9:

0   %G%U%)%k%H (1 $HF1$8)
1   <4$N:BI8                              1.23, 2.45
2   %0%i%U:BI8 (0 $+$i 1 $^$G)           /0.00, 1.00/
3   x = timefmt     y = <4:BI8            [('set timefmt' $N@_Dj), 2.45]
4   x = F|IU        y = <4:BI8            [31. 12. 1999, 2.45]
5   x = ;~9o        y = <4:BI8            [23:59, 2.45]
6   x = F|IU/;~9o   y = <4:BI8            [31. 12. 1999 23:59, 2.45]
7   'set mouse mouseformat' $K$h$k=q<0!"Nc: "mouse x,y = 1.23,     2.450"

### %^%&%9%9%/%m!<%k (scrolling)

2 <!85%0%i%U$H 3 <!85%0%i%U$NN>J}$G!"X $H Y <4$N?-=L$O%^%&%9%[%$!<%k$r;H$&$3$H$G2D4@0$G$-$^$9!#<wheel-up> $O%9%/%m!<%k%"%C%W$7 (YMIN $H YMAX $NN>J}$r Y $NHO0O$N 10 %Q!<%;%s%H$:$DA}2C$5$;!"Y2MIN $H Y2MAX $K$bF1MM$N$3$H$r9T$$$^$9)!"<wheel-down> $O%9%/%m!<%k%@%&%s$7$^$9!#<shift-wheel-up> $O:8%9%/%m!<%k$7 (XMIN $H XMAX $NN>J}!"$=$7$F X2MIN $H X2MAX $NN>J}$r8:>/)!"<shift-wheel-down> $O1&%9%/%m!<%k$7$^$9!#<control-wheel-up> $O%0%i%U$NCf?4J}8~$K%:!<%`%$%s$7!"<control-wheel-down> $O%:!<%`%"%&%H$7$^$9!#<shift-control-wheel-up> $O X $H X2 <4$N$_$K1h$C$F%:!<%`%$%s$7!"<shift-control-wheel-down> $O X $H X2 <4$K1h$C$F$N$_%:!<%`%"%&%H$7$^$9!#

### X11 $G$N%^%&%9 (X11 mouse)

x11 $N=PNO7A<0$N%*%W%7%g%s **set term x11 <n>** $r;H$C$FJ#?t$N X11 IA2h%&%#%s%I%&$,3+$$$F$$$k>l9g!"%^%&%9%3%^%s%I$H%[%C%H%-!<$N5!G=$r$A$c$s$H;H$($k$N$O8=:_$NIA2h%&%#%s%I%&$N$_$G$9!#$7$+$7!"B>$N%&%#%s%I%&$b:82<$K%^%&%9$N:BI8$rI=<(0L$O$7$F$/$l$k$G$7$g$&!#

### Zoom

3HBg (zoom) $O!"DL>o$O:8%^%&%9%\%?%s$r2!$9$3$H$G9T$o$l!"3HBgHO0O$N@~0z$-$O%^%&%9$N%I%i%C%0$G9T$$$^$9$,!"$3$l$H$O0[$J$k%^%&%9%\%?%s$rMW5a$9$k<B9T4D6-$b$"$k$+$b$7$l$^$;$s!#85$N%0%i%U$O!"%0%i%U%&%#%s%I%&>e$G%[%C%H%-!<'u' $r%?%$%W$9$k$3$H$GI|85$G$-$^$9!#%[%C%H%-!<'p' $H 'n' $O!"3HBgA`:n$NMzNr$r8eJ}$HA0J}$K$?$I$j$^$9!#

%*%W%7%g%s **zoomcoordinates** $O!"3HBg$N:]$K!"3HBg$NOH$NC<$K$=$N:BI8$r=q$/$+$I$&$+$r7hDj$7!"%G%U%)%k%H$G$O ON $K$J$C$F$$$^$9!#

%*%W%7%g%s **zoomjump** $, ON $N>l9g!"%\%?%s 3 $K$h$k3HBgHO0O$NA*Br$r3+;O$9$k$H!"%^%&%9%]%$%s%?$O<+F0E*$K>/$7$@$1$:$l$?0LCV$K0\F0$7$^$9!#$3$l$O!"$4$/>.$5$$($^$?$O6u$G$5$($"$k) 3HBgHO0O$rA*Br$7$F$7$^$&$3$H$rHr$1$k$N$KJXMx$G$7$g$&!#%G%U%)%k%H$G$O **zoomjump** $O OFF $G$9!#

## Mttics

6K:BI8%0%i%U$N<~0O$N>.L\@9$j9o$_$N0u$O **set mttics** $G@)8f$5$l$^$9!#0J2<;2>H: **set mxtics (p. 152)**!#

## B?=EIA2h%b!<%I (multiplot)

%3%^%s%I **set multiplot** $O **gnuplot** $rB?=EIA2h%b!<%I$K$7$^$9!#$3$l$O!"J#?t$N%0%i%U$rF1$8%Z!<%8$dF1$8%9%/%j!<%s%&%#%s%I%&$KNY$jF1;N$KJB$Y$FI=<($7$^$9!#

=q<0:

```
set multiplot
    { title <page title> {font <fontspec>} {enhanced|noenhanced} }
    { layout <rows>,<cols>
      {rowsfirst|columnsfirst} {downwards|upwards}
      {scale <xscale>{,<yscale>}} {offset <xoff>{,<yoff>}}
      {margins <left>,<right>,<bottom>,<top>}
      {spacing <xspacing>{,<yspacing>}}
    }
set multiplot {next|previous}
unset multiplot
```

=PNO7A<0 (terminal) $K$h$C$F$O!"%3%^%s%I **unset multiplot** $,M?$($i$l$k$^$G2?$NIA2h$bI=<($5$l$J$$3$H$,$"$j$^$9!#$3$N>l9g$3$N%3%^%s%I$K$h$j%Z!<%8A4BN$NIA2h$,9T$J$o$l!"gnuplot $OI8=`$NC10lIA2h%b!<%I$K$J$j$^$9!#$=$l0J30$N=PNO7A<0$G$O!"3F **plot** %3%^%s%I$,$=$l$>$lI=<($r99?7$7$^$9!#

%3%^%s%I **clear** $O!"<!$NIA2h$K;H$&D9J}7ANN0h$r>C$9$N$K;H$($^$9!#E57?E*$K$O!"Bg$-$$%0%i%U$NFbIt$K>.$5$J%0%i%U$rA^F~$9$k$h$&$J>l9g$KI,MW$G$9!#

Dj5A:Q$N8+=P$7$d%Y%/%H%k$O!"3FIA2h$K$*$$$F!'Kh2s8=:_$N%5%$%:$H8\E@$K=>$C$F=q$+$l$^$9($=$l$i$, **screen** :BI=7O$GDj5A$5$l$F$$$J$$>l9g)!#$=$l0J3O$NA4$F$N **set** $GDj5A$5$l$k$b$N$b3FIA2h$9$Y$F$KE,MQ$5$l$^$9!#$b$7 1 EY$NIA2h$K$@$18=$o$l$FM_$7$$$b$N$r:n$j$?$$$J$i!"$=$l$,Nc$($PF|IU(timestamp) $@$H$7$?$i!" **set multiplot** $H **unset multiplot** $G0O$^$l$?%V%m%C%/Fb$N **plot** ($^$?$O **splot**, **replot**) L?Na$N0l$D$r **set time** $H **unset time** $G$O$5$s$G$/$@$5$$!#

multiplot $N%?%$%H%k$O!"8D!9$NIA2h%?%$%H%k$,$"$C$?$H$7$F$b!"$=$l$H$OJL$N$b$N$G!"%Z!<%8$N>eIt$K$=$N$?$a$N%-%c%s%P%9A4BN$NI}$K$o$?$k%9%Z!<%9$,3NJ]$5$l$^$9!#

layout $,;XDj$5$l$F$$$J$$>l9g!"$"$k$$$O$h$jNI$$0LCV7h$a$r$7$?$$>l9g$O!"%3%^%s%I **set origin** $H **set size** 3FIA2h$G@5$7$$0LCV$K@_Dj$9$kI,MW$,$"$j$^$9!#>\:Y$O!"0J2<;2>H: **set origin (p. 156)**, **set size (p. 169)**!#

Nc:

```
set multiplot
set size 0.4,0.4
set origin 0.1,0.1
plot sin(x)
set size 0.2,0.2
set origin 0.5,0.5
plot cos(x)
unset multiplot
```

$3$l$O!"cos(x) $N%0%i%U$r!"sin(x) $N>e$K@Q$_=E$M$FI=<($7$^$9!#

**set size** $H **set origin** $OA4BN$NIA2hNN0h$r;2>H$7!"$=$l$O3FIA2h$GMxMQ$5$l$^$9!#0J2<$b;2>H: **set term size (p. 25)**!#IA2h6-3&$r0lNs$KB7$($?$$$J$i$P!" **set margin** %3%^%s%I$G!"6-3&$N3O$NM>Gr%5%$%:$rF1$8%5%$%:$KB7$($k$3$H$,=PMh$^$9!#$=$N;HMQ$K4X$7$F$O!"0J2<;2>H: **set margin (p. 146)**!#M>Gr%5%$%:$OJ8;z%5%$%:C10L$N@dBPE*$J?tCMC10L$r;HMQ$9$k$3$H$KCm0U$7$F$/$@$5$$!#$h$C$F;D$C$?%9%Z!<%9$KIA$+$l$k%0%i%U$OI=<($9$k%G%P%$%9$NI=<(%5%$%:$K0MB8$7$^$9!#Nc$($P!"%W%j%s%?$H%G%#%9%W%l%$$NI=<($OB?J,0c$C$?$b$N$K$J$k$G$7$g$&!#

%*%W%7%g%s **layout** $K$h$j!"3FIA2h$NA0$K$=$l$>$lM?$($F$$$? **set size** $d **set origin** %3%^%s%I$J$7$K!"C1=c$JJ#?t%0%i%U$NIA2h$r:n@.$G$-$^$9!#$=$l$i$N@_Dj$O<+F0E*$K9T$J$o$l!"$$$D$G$b$=$N@_Dj$rJQ99$G$-$^$9!# **layout** $G$OI=<($O <rows> 9T$H <cols> Ns$N3J;R$KJ,3d$5$l!"3F3J;R$O!"$=$N8e$KB3$/BP1~$9$kL>A0$N%*%W

%7%g%s$K$h$C$F9T (rowsfirst) ! "$ "$k$$$ONs (columnsfirst) $,@h$KKd$a$i$l$F9T$-$^$9! #IA2h%0%i%U$N@Q$_>e$2$O2<J}8~ (**downwards**) $K! "$^$?$O>eJ}8~ (**upwards**) $K?-$S$k$h$&$K$G$-$^$9! #%G%U%)%k%H$O **rowsfirst** $G **downwards** $G$9! #%3%^%s%I **set multiplot next** $H **set multiplot previous** $O! "%l%$%"%&%H%*%W%7%g%s$r;HMQ$7$F$$$k>l9g$N$_$K4X78$7$^$9! #**next** $O! "3J;RFb$N<!$N0LCV$r%9%-%C%W$7! "6uGr$r;D$7$^$9! #**prev** $O! "D>A0$KIA2h$7$?0LCV$ND>A0$N3J;R0LCV$KLa$j$^$9! #

3FIA2h$O **scale** $G?-=L$r! "**offset** $G0LCV$NJ?9T0\F0$r9T$J$&$3$H$,$G$-$^$9! #scale $d offset $N y $NCM$,>JN,$5$l$?>l9g$O! "x $NCM$,$=$l$K;HMQ$5$l$^$9! #**unset multiplot** $K$h$j<+F0G[CV5!G=$O%*%U$K$J$j! "$=$7$F **set size** $H **set origin** $NCM$O **set multiplot layout** $NA0$N>uBV$KI|5"$5$l$^$9! #

Nc:

```
set size 1,1
set origin 0,0
set multiplot layout 3,2 columnsfirst scale 1.1,0.9
[ $3$3$K$O 6 $D$^$G$NIA2h%3%^%s%I ]
unset multiplot
```

>e$NNc$G$O 6 $D$NIA2h$, 2 Ns$NCf$K>e$+$i2<$X! ": 8$+$i1&$X$HKd$a$i$l$F9T$-$^$9! #3FIA2h$O?eJ?%5%$%:$, 1.1/2! "?bD>%5%$%:$, 0.9/3 $H$J$j$^$9! #

B>$K$b! "$=$N%l%$%"%&%HFb$N$9$Y$F$N%0%i%U$K0lMM$J%^!<%8%s$r%*%W%7%g%s **layout margins** $H **spacing** $G@_Dj$9$k$3$H$,$G$-$^$9$,! "$3$l$O0l=o$K;H$&I,MW$,$"$j$^$9! #**margins** $O! "3J;RG[CV$NJ#?t%0%i%UA4BN$N30B&$KBP$9$k%^!<%8%s$r@_Dj$7$^$9! #

**spacing** $O! "NY@\$9$kItJ,%0%i%U4V$N7d4V$rM?$($^$9$,! "**character** $+**screen** C10L$G;XDj$9$k$3$H$b$G$-$^$9! #C10l$NCM$r;XDj$9$k$H! "$=$l$O x, y $NN>J}$NJ}8~$K;HMQ$5$l$^$9$,! "2 $D$N0[$J$kCM$r;XDj$9$k$3$H$b$G$-$^$9! #

0l$D$NCM$KC10L$,$J$1$l$P! "D>A0$N%^!<%8%s@_Dj$N$b$N$r;HMQ$7$^$9! #

Nc:

```
set multiplot layout 2,2 margins 0.1, 0.9, 0.1, 0.9 spacing 0.0
```

$3$N>l9g! ": 8$K$"$k%0%i%U$N: 8$N6-3&$O! "%9%/%j!<%s: BI8$N 0.1 $KCV$+$l! "1&$K$"$k%0%i%U$N1&$N6-3&$O%9%/%j!<%s: BI8 0.9 $N>l=j$KCV$+$l$k! "Ey$H$J$j$^$9! #3F%0%i%U$N7d4V$O 0 $K;XDj$7$F$$$k$N$G! "FbB&$N6-3&@~$O=E$J$j$^$9! #

Nc:

```
set multiplot layout 2,2 margins char 5,1,1,2 spacing screen 0, char 2
```

$3$l$O! ": 8$N%0%i%U$N6-3&$O! "%-%c%s%P%9$N: 8C<$+$i 5 J8;zI}$N>l=j$K! "1&$N%0%i%U$N1&$N6-3&$O! "%-%c%s%P%9$NC<$+$i 1 J8;zI}$N>l=j$K$"$k$h$&$J%l%$%"%&%H$r@8@.$7$^$9! #2<$N%^!<%8%s$O 1 J8;zJ,$N9b$5! ">e$N%^!<%8%s$O 2 J8;zJ,$N9b$5$K$J$j$^$9! #%0%i%U4V$N?eJ?J}8~$N7d4V$O$"$j$^$;$s$,! "=DJ}8~$K$O 2 J8;zJ,$N9b$5$KEy$7$$7d4V$,$"$j$^$9! #

Nc:

```
set multiplot layout 2,2 columnsfirst margins 0.1,0.9,0.1,0.9 spacing 0.1
set ylabel 'ylabel'
plot sin(x)
set xlabel 'xlabel'
plot cos(x)
unset ylabel
unset xlabel
plot sin(2*x)
set xlabel 'xlabel'
plot cos(2*x)
unset multiplot
```

0J2<$b;2>H: `multiplot $N%G%b (multiplt.dem)`

## Mx2tics

x2 (>e) <4$N>.L\@9$j9o$_$N0u$O **set mx2tics** $G@)8f$5$l$^$9! #0J2<;2>H: **set mxtics (p. 152)** ! #

## >.L\@9$j9o$_ (mxtics)

x <4$N>.L\@9$j9o$_$N0u$O **set mxtics** $G@)8f$5$l$^$9! #**unset mxtics** $K$h$C$F$=$l$rI=<($5$;$J$/$9$k$3 $H$,=PMh$^$9! #F1MM$N@)8f%3%^%s%I$,3F<4Kh$KMQ0U$5$l$F$$$^$9! #

=q<0:

```
set mxtics {<freq> | default}
unset mxtics
show mxtics
```

$3$l$i$N=q<0$O **mytics**, **mztics**, **mx2tics**, **my2tics**, **mrtics**, **mttics**, **mcbtics** $KBP$7$F$bF1$8$G$9! #

<freq> $OBgL\@9$j4V$N! ">.L\@9$j$K$h$C$FJ,3d$5$l$k6h4V$N?t (>.L\@9$j$N?t$G$O$"$j$^$;$s) $G$9! #DL>o$N @~7A<4$KBP$7$F$O%G%U%)%k%H$NCM$O 2 $+ 5 $G! "$3$l$OBgL\@9$j$K$h$C$FJQ2=$7$^$9! #$h$C$FBgL\@9$j4V$K 1 $D! "$^$?$O 4 $D$N>.L\@9$j$,F~$k$3$H$K$J$j$^$9! #**default** $r;XDj$9$k$3$H$K$h$C$F>.L\@9$j$N?t$O%G%U%)%k %H$NCM$KLa$j$^$9! #

<4$,BP?t<4$G$"$k>l9g! "J,3d6h4V$N?t$O%G%U%)%k%H$G$OM-0U$J?t$K%;%C%H$5$l$^$9 (10 8D$ND9$5$r8 5$K$7$F)! # <freq> $,M?$($i$l$F$$$l$P$=$A$i$,M%@h$5$l$^$9! #$7$+$7! "BP?t<4$G$OD L>o$N>.L\@9$j (Nc$($P 1 $+$i 10 $^ $G$N 2, 3, ..., 8, 9 $N9o$_) $O! "9 $D$NItJ,6h4V$7$+$"$j$^$;$s$,! "<freq> $N@_Dj$O 10 $H$9$k$3$H$G$=$&$J$j $^$9! #

>.L\@9$j$rG$0U$N0LCV$K@_Dj$9$k$K$O! "("<label>" <pos> <level>, ...) $N7A<0$r **set {x|x2|y|y2|z}tics** $G ;HMQ$7$F$/$@$5$$! #$?$@$7! "<label> $O6u ("") $G! "<level> $r 1 $K$7$^$9! #

%3%^%s%I **set m{x|x2|y|y2|z}tics** $O! "BgL\@9$j$,0lMM$N4V3V$N>l9g$K$N$_F/$-$^$9! #$b$7A4$F$NBgL\@9$j$, **set {x|x2|y|y2|z}tics** $K$h$C$F<jF0$GG[CV$5$l$?>l9g$O! "$3$N>.L\@9$j$N%3%^%s%I$OL5;k$5$l$^$9! #<+F0E* $JBgL\@9$j$NG[CV$H<jF0$N>.L\@9$j$NG[CV$O! "**set {x|x2|y|y2|z}tics** $H **set {x|x2|y|y2|z}tics add** $H$r;H $&$3$H$G6&B8$G$-$^$9! #

Nc:

```
set xtics 0, 5, 10
set xtics add (7.5)
set mxtics 5
```

$3$N>l9g! "BgL\@9$j$O 0,5,7.5,10 ! ">.L\@9$j$O 1,2,3,4,6,7,8,9 $N>l=j

```
set logscale y
set ytics format ""
set ytics 1e-6, 10, 1
set ytics add ("1" 1, ".1" 0.1, ".01" 0.01, "10^-3" 0.001, \
               "10^-4" 0.0001)
set mytics 10
```

$3$N>l9g! "BgL\@9$j$O;XDj$5$l$?=q<0$G! ">.L\@9$j$OBP?tE*$KG[CV

%G%U%)%k%H$G$O>.L\@9$j$NI=<($O! "@~7A<4$G$O%*%U$G! "BP?t<4$G$O%*%s$K$J$C$F$$$^$9! #$=$N@_Dj$O! "BgL\@9$j $KBP$9$k **axis|border** $H **{no}mirror** $N;XDj$r7Q>5$7$^$9! #$3$l$i$K4X$9$k>pJs$K$D$$$F$O! "0J2<;2>H: **set xtics (p. 187)**! #

## My2tics

y2 (1&) <4$N>.L\@9$j9o$_$N0u$O **set my2tics** $G@)8f$5$l$^$9! #0J2<;2>H: **set mxtics (p. 152)**! #

## Mytics

y <4$N>.L\@9$j9o$_$N0u$O **set mytics** $G@)8f$5$l$^$9! #0J2<;2>H: **set mxtics (p. 152)**! #

## Mztics

z <4$N>.L\@9$j9o$_$N0u$O **set mztics** $G@)8f$5$l$^$9! #0J2<;2>H: **set mxtics (p. 152)**! #

## Nonlinear

=q<0:

```
set nonlinear <axis> via f(axis) inverse g(axis)
unset nonlinear <axis>
```

[version 5.2 $G$N?7%3%^%s%I] $3$N%3%^%s%I$O%3%^%s%I **set link** $K;w$F$$$^$9$,!"2 $D$N%j%s%/$5$l$?<4$N0l J}$N$_$rI=<($9$kE@$,0c$$$^$9!#1#$5$l$k<4$O@~7A<4$N$^$^$G$9!#I=<($9$k<4$K1h$&:BI8$O!"g(x) $rE,MQ$7$F 1#$1$F$$$k<4$N:BI8$+$i3d$jEv$F$i$l!"f(x) $OI=<($9$k<4$N:BI8$r1#$1$F$$$k@~7A<4$KBP1~$5$;$^$9!#

Nc:

```
set xrange [1:1000]
set nonlinear x via log10(x) inverse 10**x
```

$3$NNc$OBP?t<4$r:n@.$7$F$$$F!"**set log x** $HF1$88z2L$r@8$`$b$&0l$D$NJ}K!$G$9!#$3$N>l9g1#$1$F$$$k<4$O!" [log10(xmin):log10(xmax)] $r7W;;$9$k$3$H$G [0:3] $H$$$&HO0O$r;}$A$^$9!#JQ49<0$H5UJQ49<0$O!"$=$NN>J}$r ;XDj$9$kI,MW$,$"$j$^$9!#

Nc:

```
set xrange [-3:3]
set nonlinear x via norm(x) inverse invnorm(x)
```

$3$NNc$O3NN(%9%1!<%k ("%W%m%S%C%H") $N x <4$r:n@.$7!"N_@Q@55,J,I[4X?t Phi(x) $N%0%i%U$,@~7A$N y <4$K BP$7$FD>@~$H$J$j$^$9!#

Nc:

```
logit(p) = log(p/(1-p))
logistic(a) = 1. / (1. + exp(-a))
set xrange [.001 : .999]
set nonlinear y via logit(y) inverse logistic(y)
plot logit(x)
```

$3$NNc$O%m%8%C%H%9%1!<%k$N y <4$r:n@.$7!"@~7A$N x <4$KBP$9$k logit(x) $N%0%i%U$,D>@~$K$J$j$^$9!#

Nc:

```
f(x) = (x <= 100) ? x : (x < 500) ? NaN : x-390
g(x) = (x <= 100) ? x : x+390
set xrange [0:1000] noextend
set nonlinear x via f(x) inverse g(x)
set xtics add (100,500)
plot sample [x=1:100] x, [x=500:1000] x
```

$3$NNc$O"@ZCG<4" $r:n@.$7$^$9!#x :BI8$O:8$K 0 $+$i 100!"1&$K 500 $+$i 1000 $,JB$S!"$=$N4V$K 10 I}$N >.$5$J7d4V$,$G$-$^$9!#100 < x < 500 $N4V$N%G!<%?$OIA2h$5$l$:!"$3$l$O4 |BTDL$j$NF0:n$r$7$^$9!#

## ?^7A%*%V%8%'%/%H (object)

%3%^%s%I **set object** $O!"$=$N8e$N$9$Y$F$N%0%i%U$K8=$l$kC10l$N%*%V%8%'%/%H$rDj5A$7$^$9!#%*%V%8%'%/%H$O $$$/$D$G$bDj5A$G$-$^$9!#%*%V%8%'%/%H$N7?$O!"8=:_$O **rectangle** (D9J}7A)!"**circle** (1_)!"**ellipse** (BJ1_) $r %5%]!<%H$7$F$$$^$9!#D9J}7A$O!"%3%^%s%I **set style rectangle** $K$h$C$F@_Dj$5$l$?%9%?%$%k$NB0@-$NAH(EI $jDY$7!"?'!"6-3&) $r%G%U%)%k%H$H$7$F<u$17Q$.$^$9$,!"8D!9$N%*%8%'%/%H$rJL!9$N%9%?%$%kB0@-$GIA2h$9$k $3$H$b$b$A$m$s2DG=$G$9!#1_$HBJ1_$O!"**set style fill** $K$h$kEI$jDY$7%9%?%$%k$r<u$17Q$.$^$9!#2 <!85%0%i%U $N%*%V%8%'%/%H$O!"<4:BI8!"%0%i%U:BI8 (**graph**), 6K:BI8!"%9%/%j!<%s:BI8 (**screen**) $N$$:$l$NAH$_9g$o$; $G$bDj5A$G$-$^$9!#

3 <!85%0%i%U$N%*%V%8%'%/%H;XDj$G$O!"%0%i%U:BI8$O;H$($^$;$s!#3 <!85$ND9J}7A$HBJ1_$O!"%9%/%j!<%s:BI8 $@$1$K@)8B$5$l$F$$$^$9!#

=q<0:

```
set object <index>
    <object-type> <object-properties>
    {front|back|behind} {clip|noclip}
    {fc|fillcolor <colorspec>} {fs <fillstyle>}
    {default} {lw|linewidth <width>} {dt|dashtype <dashtype>}
unset object <index>
```

<object-type> $O! "**rectangle**, **ellipse**, **circle**, **polygon** $N$$ :$1$+$G$9! #8D! 9$N% *%V% 8% '% /%H$N7?$O! "$=$N7?$KFCM-$N@-<A$b$$/$D$+; }$C$F$$^$9! #

**front** $r; XD j$9$k$H! "% *%V% 8% '% /%H$O$9$Y$F$NIA2hMWAG$NA0 (>e) $KIA2h$5$1^$9$,! "**front** $H; XD j$5$1$?%i%Y%k$h$ j$O8e$m (2<) $K$J$ j$^$9! #**back** $r; XD j$9$k$H! "$9$Y$F$NIA2hMWAG! "$9$Y$F$N%i%Y%k$N8e$m$KG [CV$5$1$^$9! #**behind** $O! "<4$d **back** $ND9J}7A$r4^$ '$9$Y$F$N$b$N$N8e$m$KG [CV$5$1$^$9! #$h$C$F! "

```
set object rectangle from screen 0,0 to screen 1,1 behind
```

$O! "%0%i%U$d%Z! <%8A4BN$NGX7J$K?'$r$D$1$k$N$KMxMQ$G$-$^$9! #

%G%U%)%k%H$G$O! "% *%V% 8% '% /%H$O! ">/$J$/$H$b 1 $D$ND :E@$,%9%/%j! <%s:BI8$GM?$ ($i$1$F$$$J$$8B$j! "%0%i%U6-3&$G%/%j%C%T%s%0$5$1$^$9! #**noclip** $H@_Dj$9$k$H! "%0%i%U6-3&$G$N%/%j%C%T%s%0$OL58z$K$J$j$^$9$,! "%9%/%j! <%s%5%$%:$KBP$9$k%/%j%C%T%s%0$O9T$o$1$^$9! #

% *%V% 8% '% /%H$NEI$jDY$7$N?'$O <colorspec> $G; XD j$7$^$9! #**fillcolor** $O **fc** $H>JN,$G$-$^$9! #EI$jDY$7%9%?%$%k$O <fillstyle> $G; XD j$7$^$9! #>\:Y$O! "0J2<; 2>H **colorspec (p. 41)**, **fillstyle (p. 172)**! #%-! <%o! <%I **default** $r; XD j$9$k$H! "$3$1$i$NB0@-$OIA2h$,<B:]$K9T$o$1$k$H$-$N%G%U%)%k%H$N@_Dj$r<u$17Q$.$^$9! #0J2<; 2>H **set style rectangle (p. 175)**! #

## D9J}7A (rectangle)

=q<0:

```
set object <index> rectangle
    {from <position> {to|rto} <position> |
     center <position> size <w>,<h> |
     at <position> size <w>,<h>}
```

D9J}7A$N0LCV$O! "BP3Q$K8~$+$$9g$& 2 $D$ND :E@ (:82<$H1&>e) $N0LCV! "$ "$k$$$OCf?4E@$N0LCV$H2#I} (<w>) $H=DI} (<h>) $G; XD j$G$-$^$9! #$$:$1$N>l9g$bE@$N0LCV$O! "<4$N:BI8 (**first**, **second**)! "%0%i%UNN0hFb$NAjBP:BI8 (**graph**)! "%9%/%j! <%s:BI8 (**screen**) $N$$:$1$+$r; HMQ$G$-$^$9 (0J2<; 2>H **coordinates (p. 26)**)! #% *%W%7%g%s **at** $H **center** $OF1$80UL#$G$9! #

Nc:

```
# :BI8<4$G0O$^$1$?NN0hA4BN$NGX7J$r?e?'$K
set object 1 rect from graph 0, graph 0 to graph 1, graph 1 back
set object 1 rect fc rgb "cyan" fillstyle solid 1.0

# :82<3Q$, 0,0, 1&>e3Q$, 2,3 $N@V$$;M3Q$r0l$DCV$/
set object 2 rect from 0,0 to 2,3 fc lt 1

# @D$$6-3&$N6u (EI$jDY$5$J$$) D9J}7A$rCV$/
set object 3 rect from 0,0 to 2,3 fs empty border rgb "blue"

# D:E@$O0\F0$7$J$$$^$^! "EI$jDY$7$H?'$r%G%U%)%k%H$KJQ99
set object 2 rect default
```

%9%/%j! <%s:BI8$GD9J}7A$N3Q$r; XD j$9$k$H! "$=$1$O8=:_$N%0%i%UNN0h$NC<$r1 [$ ($k$3$H$b2DG=$G$9$,! "$=$NB>$N>l9g$OD9J}7A$O%0%i%UFb$K<}$^$k$h$&$K%/%j%C%T%s%0$5$1$^$9! #

## BJ1_ (ellipse)

=q<0:

```
set object <index> ellipse {at|center} <position> size <w>,<h>
    {angle <orientation>} {units xy|xx|yy}
    {<other-object-properties>}
```

BJ1_$N0ILCV$O!"Cf?4$r;XDj$7!"$=$N8e$m$KI}$H9b$5(<g<4$HI{<4) $r;XDj$7$^$9!#%-!<%o!<%I **at** $H **center** $OF1$80UL#$G$9!#Cf?4$N0LCV$N;XDj$K$O!"<4$N:BI8 (**first**, **second**)!"%0%i%UNN0hFb$NAjBP:BI8 (**graph**)!"%9%/%j!<%s:BI8 (**screen**) $N$$$:$l$+$r;HMQ$G$-$^$9(0J2<;2>H: **coordinates (p. 26)**)!#<g<4$HI{<4$ND9$5$O!"<4$N:BI8$GM?$($J$1$l$P$$$1$^$;$s!#BJ1_$N8~$-(orientation) $O!"?eJ?<4$HBJ1_$N<g<4$H$N4V$N3QEY$G;XDj$7$^$9!#3QEY$rM?$($J$1$l$P!"%G%U%)%k%H$NBJ1_$N8~$-$,Be$o$j$K;H$o$l$^$9(0J2<;2>H: **set style ellipse (p. 176)**)!#%-!<%o!<%I **units** $O!"BJ1_$N<4$N=L<\$N@)8f$K;HMQ$7$^$9!#**units xy** $O!"<g<4$Ox <4$NC10L$G!"I{<4$Oy <4$NC10L$G7W;;$7$^$9$,!"**units xx** $ON><4$H$bx <4$NC10L$G=L<\$7!"**units yy** $ON><4$H$by <4$NC10L$K$J$j$^$9!#%G%U%)%k%H$O **xy** $G$9$,!"**set style ellipse units** $N@_Dj$G$$$D$G$bJQ99$G$-$^$9!#

Cm0U: x <4$H y <4$N=L<\$,Ey$7$/$J$$>l9g($=$7$F **units xy** $N>l9g)!"2sE>8e$N<g<4$HI{<4$NHf$O@5$7$/$O$J$j$^$;$s!#

**set object ellipse size <2r>,<2r>** $H **set object circle <r>** $H$O!"0lHL$K$OF1$8$3$H$K$O$J$i$J$$$3$H$KCm0U$7$F$/$@$5$$!#circle $NH>7B$O>o$K x <4$NC10L$G7W$i$l!"$h$C$F x <4$H y <4$N=L<\$,0c$C$?$j!"IA2h$N%"%9%Z%/%HHf$,1 $G$J$/$F$b!">o$K1_$,@8@.$5$l$^$9!#**units** $, **xy** $K@_Dj$5$l$F$$$l$P!"'set object ellipse' $G$O!":G=i$N <2r> $O x <4$NC10L$G!"8e$m$N <2r> $O y <4$NC10L$G7W$i$l$^$9$,!"$3$l$O x <4$H y <4$N=L<\$,F1$8$G!"$+$DIA2h$N%"%9%Z%/%HHf$,1 $G$"$k>l9g$N$_1_$r@8@.$9$k$3$H$r0UL#$7$^$9!#$7$+$7!"**units** $r **xx** $d **yy** $K%;%C%H$9$l$P!"%3%^%s%I **set object** $G;XDj$7$?D>7B$OF1$8C10L$G7W;;$5$l$k$N$G!"BJ1_$O@5$7$$%"%9%Z%/%HHf$r;}$A!"IA2h$r%j%5%$%:$7$F$b$=$N%"%9%Z%/%HHf$OJ];}$5$l$^$9!#

## 1_ (circle)

=q<0:

```
set object <index> circle {at|center} <position> size <radius>
    {arc [<begin>:<end>]}
    {<other-object-properties>}
```

1_$N0LCV$O!"Cf?4$r;XDj$7!"$=$N8e$m$KH>7B$r;XDj$7$^$9!#%-!<%o!<%I **at** $H **center** $OF1$80UL#$G$9!#2<!85%0%i%U$G$O!"0LCV$HH>7B$OG$0U$N:BI87O$G;XDj$G$-$^$9!#0J2<;2>H: **coordinates (p. 26)**!#3<!85%0%i%U$N1_$K$O%0%i%U:BI8$O;H$($^$;$s!#$=$N$I$N>l9g$G$b!"H>7B$O<4!"%0%i%U!"%9%/%j!<%s$N?eJ?J}8~$N=L<\$KBP$7$F7W$i$l!"?eJ?J}8~$H?bD>J}8~$N=L<\$K$:$l$,$"$C$F$b!"7k2L$,>o$K@5$7$/1_$K$J$k$h$&$KD>$5$l$^$9!#1_$r%0%i%U$N:BI8$GIA$-$?$$(D$^$j?eJ?<4$H?bD><4$N%9%1!<%k$,0c$&>l9g$K$O$=$l$,BJ1_$H$7$FI=<($5$l$k$h$&$K$7$?$$)>l9g$O!"Be$o$j$K **set object ellipse** $r;H$C$F$/$@$5$$!#

%G%U%)%k%H$G$O!"40A4$J1_$,IA2h$5$l$^$9!#%*%W%7%g%s$N **arc** $K3+;O3Q$H=*N;3Q$rEY$rC10L$H$7$F;XDj$9$k$H1_8L$rIA2h$7$^$9!#1_8L$O!">o$KH?;~7W2s$j$KIA$+$l$^$9!#

0J2<$b;2>H: **set object ellipse (p. 154)**!#

## B?3Q7A (polygon)

=q<0:

```
set object <index> polygon
    from <position> to <position> ... {to <position>}
```

$^$?$O

```
    from <position> rto <position> ... {rto <position>}
```

B?3Q7A$N0LCV$O!"D:E@$N0LCV$NNs$rM?$($k$3$H$G;XDj$G$-$^$9!#$=$l$i$K$O!"G$0U$N:BI87O$,;H$($^$9!#Aj BPE*$J:BI8 (rto) $r;XDj$9$k>l9g$O!"$=$N:BI87O$OA0$ND:E@$HF1$8:BI87O$G$J$1$l$P$$$1$^$;$s!#0J2<;2>H: **coordinates (p. 26)**!#

Nc:

```
set object 1 polygon from 0,0 to 1,1 to 2,0
set object 1 fc rgb "cyan" fillstyle solid 1.0 border lt -1
```

## %0%i%U0LCV$ND4@0 (offsets)

%*%U%;%C%H$O! "<+F0=L<\$5$1$?%0%i%U$NCf$N%G!<%?$N<~$j$K6u$N6-3&$rCV$/;EAH$_$rDs6!$7$^$9! #%*%U%;%C%H$O! "x1,y1 <4$H2 <!85$N **plot** %3%^%s%I$N$_$G0UL#$r; }$A$^$9! #

=q<0:

```
set offsets <left>, <right>, <top>, <bottom>
unset offsets
show offsets
```

3F%*%U%;%C%H$OD j?t! "$^$?$O?t<0$,; H$ (! "$=$1$i$N%G%U%)%k%H$NCM$O0 $G$9! #%G%U%)%k%H$G$O! ": 81&$N%*%U%;%C%H$O x1 <4$HF1$8C10L$G; XD j$7! ">e2<$N%*%U%;%C%H$O y1 <4$HF1$8C10L$G; XD j$7$^$9$,! "%-!<%o!<%I "graph" $rMQ$$$k$3$H$G<4$NA4HO0O$KBP$9$k3d9g$H$7$F%*%U%;%C%H$r; XD j$9$k$3$H$b$G$-$^$9! #@5$N%*%U%;%C%H$NCM$O! "<4$NHO0O$r; XD j$5$1$?J}8~$X?-$P$7$^$9! #Nc$ ($P@5$N2<J}8~$N%*%U%;%C%H$O y $N:G>.CM$r$h$j>.$5$JCM$K$7$^$9! #5v$5$1$F$$$kHO0O$G$NI i$N%*%U%;%C%H$O! "<+F0=L<\! "$"$k$$O%/%j%C%T%s%0$H$N; W$$$b$h$i$L7k2L$r@8$`2DG=@-$,$"$j$^$9! #<+F0=L<\5!G=$+$i<4$NHO0O$ND4@a$r<i$j$?$$>l9g$O! ""set auto fix" $b; XD j$9$k$H$$$$$G$7$g$&! #

Nc:

```
set auto fix
set offsets graph 0.05, 0, 2, 2
plot sin(x)
```

$3$N sin(x) $N%0%i%U$N y $NHO0O$O [-3:3] $K$J$j$^$9! #$=$1$O! "4X?t$N y $NHO0O$O [-1:1] $K<+F0=L<\$5$1$^$9$,! "?bD>J}8~$N%*%U%;%C%H$,$=$1$>$l 2 $G$"$k$?$a$G$9! #x $NHO0O$O [-11:10] $K$J$j$^$9$,! "$3$1$O%G%U%)%k%H$, [-10:10] $G$=$NA4HO0O$,: 8$K 0.05 $N3d9g$@$1?-$P$5$1$k$?$a$G$9! #

## %0%i%U0LCV$N; XD j (origin)

%3%^%s%I **set origin** $O%9%/%j!<%s>e$G6JLLIA2h$N86E@$r; XD j ($9$J$o$A! "%0%i%U$H$=$NM>Gr) $9$k$N$K; HMQ$7$^$9! #$=$N:BI87O$O%9%/%j!<%s:BI87O (**screen**) $GM?$ ($^$9! #$3$N:BI87O$K4X$9$k>pJs$K$D$$$F$O! "0J2<; 2>H: **coordinates (p. 26)** ! #

=q<0:

```
set origin <x-origin>,<y-origin>
```

## =PNO@h; XD j (output)

%G%U%)%k%H$G$O! "%0%i%U$OI8=`=PNO$KI=<($5$1$^$9! #%3%^%s%I **set output** $O$=$N=PNO$r; XD j$5$1$?%U%!%$%k$d%G%P%$%9$K%j%@%$%l%/%H$7$^$9! #

=q<0:

```
set output {"<filename>"}
show output
```

%U%!%$%kL>$O0zMQId$G0O$^$J$1$1$P$J$j$^$;$s! #%U%!%$%kL>$,>JN,$5$1$?>l9g$O! "D>A0$N **set output** $G3+$+$1$?%U%!%$%k$,%/%m!<%:$5$1! "?7$?$J=PNO$,I8=`=PNO (STDOUT) $KAw$i$1$^$9! #($b$7! "**set output "STDOUT"**" $H$9$k$H=PNO$O "STDOUT" $H$$$&L>A0$N%U%!%$%k$KAw$i$1$k$+$b$7$1$^$;$s! ["$+$b$7$1$J$$" $H$$$&$N$O! "Nc$ ($P **x11** $d **wxt** $J$I$N terminal (=PNO7A<0) $G$O **set output** $,L5; k$5$1$k$+$i$G$9! #])

**set terminal** $H **set output** $NN>J}$r; XD j$9$k>l9g! "**set terminal** $r@h$K; XD j$9$kJ}$,0BA4$G$9! #$=$1$O! "$"$k<o$N terminal $G$O! "OS $,I,MW$H$9$k%U%i%0$r%;%C%H$9$k$3$H$,$"$k$+$i$G$9! #Nc$ ($P! "%P%$%J%j%U%!%$%k$KBP$7$FJL! 9$N open %3%^%s%I$rI,MW$H$9$k$h$&$J OS $J$I$,$=$1$K3 :Ev$7$^$9! #

%Q%$%W$r%5%]!<%H$9$k4D6-$G$O! "%Q%$%W=PNO$bM-MQ$G$9! #Nc$ ($P0J2<$ND L$j$G$9:

```
set output "|lpr -Plaser filename"
set term png; set output "|display png:-"
```

MS-DOS $G$O! "**set output "PRN"**" $H$9$k$HI8=`$N%W%j%s%?$K=PNO$5$1$^$9! #VMS $G$O=PNO$OG$0U$N%9%W!<%k2DG=$J%G%P%$%9$KAw$k$3$H$,=PMh$^$9! #

## G^2pJQ?t%b!<%I (parametric)

**set parametric** %3%^%s%I$O **plot** $*$h$S **splot** $N0UL#$rDI>o$N4X?tIA2h$+$iG^2pJQ?tI=<( (parametric) 4X?tIA2h$KJQ99$7$^$9!#**unset parametric** $r;H$($P85$NIA2h%b!<%I$KLa$j$^$9!#

=q<0:

```
set parametric
unset parametric
show parametric
```

2 <!85%0%i%U$K$*$$$F$O!"G^2pJQ?tI=<(4X?t$O$R$H$D$NG^2pJQ?t$KBP$9$k 2 $D$N4X?t$GDj$a$i$l$^$9!#Nc$H$7$F$O plot sin(t),cos(t) $H$9$k$3$H$K$h$C$F1_$,IA$1$^$9 (%"%9%Z%/%HHf$,@5$7$/@_Dj$5$l$F$$$l$P!#0J2<;2>H**set size (p. 169)**)!#**gnuplot** $O!"N>J}$N4X?t$,G^2pJQ?t$K$h$k **plot** $N$?$a$KM?$($i$l$F$$$J$1$l$P%(%i!<%a%C%;!<%8$r=P$7$^$9!#

3 <!85%0%i%U$K$*$$$F$OLL$O x = f(u,v), y = g(u,v), z = h(u,v) $GDj$a$i$l$^$9!#$h$C$F 3 $D$N4X?t$rAH$G;XDj$9$kI,MW$,$"$j$^$9!#Nc$H$7$F$O!"**cos(u)*cos(v),cos(u)*sin(v),sin(u)** $H$9$k$3$H$K$h$C$F5eLL$,IA$1$^$9!#**gnuplot** $O!"3 $DA4It$N4X?t$,G^2pJQ?t$K$h$k **splot** $N$?$a$KM?$($i$l$F$$$J$1$l$P%(%i!<%a%C%;!<%8$r=P$7$^$9!#

$3$l$K$h$C$FI=8=$G$-$k4X?t72$O!"C1=c$J f(x) 7?$N4X?t72$NFbJq$9$k$3$H$K$J$j$^$9!#$J<$J$i$P!"2 $D (3 $D) $N4X?t$O x, y (, z) $NCM$rFHN)$K7W;;$9$k5-=R$,$G$-$k$+$i$G$9!#<B:]!"t,f(t) $N%0%i%U$O!"0lHVL\$N4X?t$N$h$&$J91Ey4X?t$rMQ$$$F x $NCM$,7W;;$5$l$k>l9g$K f(x) $K$h$C$F@8@.$5$l$k%0%i%U$HEy2A$G$9!#F1MM$K!"3 <!85$G$N u,v,f(u,v) $NIA2h$O!"f(x,y) $HEy2A$G$9!#

G^2pJQ?tI=<(4X?t$O!"x $N4X?t!"y $N4X?t (!"z $N4X?t) $N=g$K;XDj$7!"$=$l$i$O6&DL$NG^2pJQ?t$*$h$S$=$NJQ0h$GDj5A$5$l$k$3$H$KN10U$7$F2<$5$$!#

$5$i$K!"**set parametric** $N;XDj$O!"?7$7$$JQ?tJQ0h$r;HMQ$9$k$3$H$r0E$K@k8@$7$^$9!#DI>o$N f(x) $d f(x,y) $, xrange!"yrange (!"zrange) $r;HMQ$9$k$N$KBP$7$F!"G^2pJQ?t$b!<%I$G$O$=$l$K2C$($F!"trange, urange, vrange $r;HMQ$7$^$9!#$3$l$i$NJQ0h$O **set trange**, **set urange**, **set vrange** $K$h$C$FD>@\;XDj$9$k$3$H$b!"**plot** $d **splot** $G;XDj$9$k$3$H$b$G$-$^$9!#8=;~E@$G$O!"$3$l$i$NG^2pJQ?t$N%G%U%)%k%H$NJQ0h$O [-5:5] $H$J$C$F$$$^$9!#>-MhE*$K$O$3$l$i$N%G%U%)%k%HCM$r$b$C$HM-0U$J$b$N$KJQ99$9$kM=Dj$G$9!#

## J?9TIA2h<4@_Dj (paxis)

=q<0:

```
set paxis <axisno> {range <range-options> | tics <tic-options>}
show paxis <axisno> {range | tics}
```

%3%^%s%I **set paxis** $O!"J?9T:BI8IA2h$N p1, p2, ... <4$N0l$D$K:nMQ$9$k$3$H0J30$O!"**set xrange** $d **set xtics** $HF1$8$G$9!#0J2<;2>H**parallelaxes (p. 66)**, **set xrange (p. 186)**, **set xtics (p. 187)**!#range $H tics %3%^%s%I$X$NDI>o$N%*%W%7%g%s$O!"J?9T:BI8IA2h%9%?%$%k$K$O0UL#$N$J$$$b$N$b$"$j$^$9$,!"0l1~$9$Y$F$r<u$1$D$1$^$9!#

## Plot

%3%^%s%I **show plot** $O8=:_$NIA2h%3%^%s%I!"$9$J$o$A **replot** %3%^%s%I$G:F8=$5$l$k!"D>A0$K9T$o$l$? **plot** $d **splot** %3%^%s%I$rI=<($7$^$9!#

$5$i$K%3%^%s%I **show plot add2history** $O!"$3$N8=:_$NIA2h%3%^%s%I$r **history** $K=q$-=P$7$^$9!#$3$l$O!"**replot** $r;H$C$FD>A0$NIA2h%3%^%s%I$K6J@~$rDI2C$7$?>l9g!"$=$7$F%3%^%s%I9TA4BN$r$9$0$KJT=8$7$?$$>l9g$KJXMx$G$9!#

## Pm3d

pm3d $O **splot** $N0l$D$N%9%?%$%k$G!"%Q%l%C%H$K3d$jIU$1$i$l$? 3 <!85!"4 <!85%G!<%?$r!"%+%i!</3%?'$N?'CO?^/6JLL$H$7$FIA2h$7$^$9!#$3$l$O$"$k"%k4%j%:%`$rMQ$$$F$$$F!"$3$l$O%G!<%?$,3J;R>u$G$"$C$F$b!"%G!<%?Av::Kh$KE@$N?t$,0c$C$F$$$k$h$&$JHs3J;R>u$N%G!<%?$G$"$C$F$b!"A0=hM}$9$k$3$H$J$/IA2h$G$-$^$9!#

=q<0 (%*%W%7%g%s$OG$0U$N=g$GM?$($k$3$H$,$G$-$^$9):

```
set pm3d {
           { at <position> }
           { interpolate <steps/points in scan, between scans> }
           { scansautomatic | scansforward | scansbackward | depthorder }
           { flush { begin | center | end } }
           { ftriangles | noftriangles }
           { clip1in | clip4in }
           { corners2color
             { mean|geomean|harmean|rms|median|min|max|c1|c2|c3|c4 }
           }
           { {no}lighting {primary <fraction>} {specular <fraction>}}
           { hidden3d {<linestyle>} | nohidden3d }
           { implicit | explicit }
           { map }
         }
show pm3d
unset pm3d
```

splot %3%^%s%I$G **with pm3d** $r;XDj$7$?>19g!"$^$?$O%G!<%?$d4X?tIA2h%9%?%$%k (**style**) $,Bg0hE*$K pm3d $K%;%C%H$5$l$F$$$k>19g!"$"$k$$$O!"pm3d %b!<%I$, **set pm3d implicit** $H$J$C$F$$$k>19g$O!"pm3d $N%+%i!<6JLL$,IA2h$5$l$^$9!#8e$N2 $D$N>19g$O!"plot %3%^%s%I$G;XDj$7$?%9%?%$%k$G@8@.$5$l$kLVL\$K p3md 6JLL$rDI2C$9$k7A$GIA2h$7$^$9!#Nc$($P!"

```
splot 'fred.dat' with lines, 'lola.dat' with lines
```

$O!"3F%G!<%?=89gKh$K@^$l@~$K$h$kLVL\$H pm3d 6JLL$NN>J}$rIA2h$7$^$9!#%*%W%7%g%s **explicit** $, ON ($^$?$O **implicit** $, OFF) $N>19g$O!"B0@-**with pm3d** $,;XDj$5$l$?IA2h$N$_$, pm3d 6JLL$H$7$FIA2h$5$l$^$9!#Nc$($P

```
splot 'fred.dat' with lines, 'lola.dat' with pm3d
```

$O!"'freq.dat' $O@^$l@~$G (@~$N$_$G) !"'lola.dat' $O pm3d 6JLL$GIA2h$5$l$^$9!#

gnuplot $N5/F0;~$O$=$N%b!<%I$O **explicit** $K$J$C$F$$$^$9!#Nr;KE*!"$=$7$F8_4 9@-$N$?$a$K!"%3%^%s%I **set pm3d;** ($9$J$o$A%*%W%7%g%s$r;XDj$7$J$$>19g) $H **set pm3d at X ...** ($9$J$o$A **at** $,:G=i$N%*%W%7%g%s$N>19g) $O%b!<%I$r **implicit** $KJQ99$7$^$9!#%3%^%s%I **set pm3d;** $O!"$=$NB>$N%*%W%7%g%s$r$=$l$i$N%G%U%)%k%H$N>uBV$K@_Dj$7$^$9!#

%G%U%)%k%H$N%G!<%?/4X?t$NIA2h%9%?%$%k$r **pm3d** $K$7$?$$>19g$O!"Nc$($P

```
set style data pm3d
```

$H$7$^$9!#$3$N>19g!"%*%W%7%g%s **implicit** $H **explicit** $O8zNO$r;}$A$^$;$s!#

$$$/$D$+$NIA2h$K$*$$$F$O!"$=$l$i$O%3%^%s%I%i%$%s$GM?$($i$l$?=g$KIA2h$5$l$k$3$H$KCm0U$7$F$/$@$5$$!#$3$l$OFC$K!"0JA0$NIA2h$r>e=q$-$7$F$=$l$G$=$N0lIt$r1#$7$F$7$^$&2DG=@-$,$"$k$h$&$J6JLL$NEI$j$D$V$7$N:]$K4X?4$r;}$?$l$k$G$7$g$&!#

p3md $N?'IU$1$O!"3 $D$N0[$J$k0LCV **top**, **bottom**, **surface** $N$$:$l$+!"$^$?$O$9$Y$F$K9T$($^$9!#0J2<;2>H: **pm3d position (p. 159)**!#0J2<$N%3%^%s%I$O!"0[$J$C$?9b$5$G3 $D$N?'IU$-$N6JLL$rIA$-$^$9:

```
set border 4095
set pm3d at s
splot 10*x with pm3d at b, x*x-y*y, x*x+y*y with pm3d at t
```

0J2<$b;2>H: **set palette (p. 161)**, **set cbrange (p. 195)**, **set colorbox (p. 121)**!#$=$7$F$b$A$m$s%G%b%U%!%$%k **demo/pm3d.dem** $b;29M$K$J$k$G$7$g$&!#

## Pm3d $N%"%k%4%j%:%` (algorithm)

$^$:!"CO?^/6JLL$,$I$N$h$&$KIA$+$l$k$N$+$K$D$$$F5-=R$7$^$9!#F~NO%G!<%?$O!"4X?t$rI>2A$7$FF@$i$l$k$+$^$?$O **splot data file** $+$iF@$i$l$^$9!#6JLL$O!"Av::(8IN)@~) $N7+$jJV$7$G9=@.$5$l$^$9!#pm3d %"%k%4%j%:%`$G$O!":G=i$NAv::$G8!=P$5$l$?NY$j9g$&2 E@$H!"<!$NAv::$G8!=P$5$l$?B>$N2 E@$N4V$NNN0h$,!"$3$l$i 4 E@$N z $NCM ($^$?$ODI2C$5$l$? 'color' MQ$NNs$NCM!"0J2<;2>H: **using (p. 98)**) $K=>$C$F3%?'$G ($^$?$O %+%i!<

$G) EI$i$1$^$9! #%G%U%)%k%H$G$O4 $D$N3Q$NCM$NJ?6QCM$,;H$o$1$^$9$,! "$=$1$O%*%W%7%g%s **corners2color** $G JQ99$G$-$^$9! #$=$1$J$j$N6JLL$rIA$/$?$a$K$O! "NY$j9g$&2 E@$NAv: :$,8r: 9$7$F$O$$$1$J$/$F! "6a@\E@Av: :Kh $NE@$N?t$,0c$$$9$.$F$O$$$1$^$;$s! #$b$A$m$s! ": G$bNI$$$N$OAv: :$NE@$N?t$,F1$8$3$H$G$9! #B>$K$O2?$bI,MW $G$O$"$j$^$;$s (Nc$ ($P%G! <%?$O3J; R>u$G$"$kI,MW$b$J$$)! #B>$K$b$3$N pm3d %"%k%4%j%:% `$O! "F~NO$5$1$? (7WB,$5$1$?! "$"$k$$$O7W; ;$5$1$?) NN0h$N3 0$K$O2?$bIA$+$J$$! "$H$$$&D9=j$,$"$j$^$9! #

6JLL$N?'$E$1$O! "0J2<$N$h$&$JF~NO%G! <%?$K4X$7$F9T$o$1$^$9:

1. 4X?t! "$^$?$O 1 $D$+ 3 $D$N%G! <%?Ns$+$i$J$k%G! <%?$N splot: >e$K=R$Y$?; M3Q7A$N 4 $D$N3Q$N z :B I8$NJ?6QCM ($^$?$O **corners2color**) $+$i! "3%?'$NHO0O [0:1] $rM?$($k **zrange** $^$?$O **cbrange** $NHO0O [min_color_z,max_color_z] $X$NBP1~$K$h$j! "3%?'/%+%i! <$NCM$,F@$i$1$^$9! #$3$NCM$O! "D>@\3%?'$N?'CO?^MQ $N3%?'$NCM$H$7$F; H$&$3$H$,$G$-$^$9! #@55,2=$5$1$?3%?'$NCM$r%+%i! <$KBP1~$5$;$k$3$H$b$G$-$^$9! #4 0A4$J @bL@$O! "0J2<; 2>H: **set palette (p. 161)**! #

2. 2 $D$+4 $D$N%G! <%?Ns$+$i$J$k%G! <%?$N splot: 3%?'/%+%i! <$NCM$O! "z $NCM$NBe$o$j$K: G8e$NNs$N: BI8$r; H$C $FF@$i$1$^$9$N$G! "?'$H z :BI8$,FHN)$J$b$N$K$J$j$^$9! #$3$1$O 4 <!85%G! <%?$NIA2h$K; H$&$3$H$,$G$-$^$9! #

B>$NCm0U:

1. J*M}3X<T$N4V$G$O! "gnuplot $NJ8=q$d%=! <%9$K8=$o$1$k 'iso_curve' (8 IN)@~) $H$$$&8 @MU$h$j$b! ">e$G8 @5Z $7$?' Av: : (scan)' $H$$$&8 @MU$NJ}$,; H$o$1$F$$$^$9! #1 EY$NAv: :$HB>$NAv: :$N5-O?$K$h$j?'CO?^$rI>2A$9$k! " $H$$$&$N$O$=$&$$$&0UL#$G$9! #

2. 'gray' $d 'color' $NCM (scale) $O! "3 j$i$+$KJQ2=$9$k%+%i! <%Q%1%C%H$X$N! "O"B3$JJQ?t$N@~7A<IA|$G$9! #$= $N<IA|$NMM; R$OIA2h%0%i%U$NNY$KD9J}7A$GI=<($5$1$^$9! #$3$NJ8=q$G$O$=$1$r "%+%i! <%\%C%/%9 (colorbox)" $H8F$S! "$=$NJQ?t$r%+%i! <%\%C%/%9<4$NJQ?t$H8F$S$^$9! #0J2<; 2>H: **set colorbox (p. 121)**,**set cbrange (p. 195)**! #

### 8w8;%b%G%k (lighting)

%G%U%)%k%H$G$O! "pm3d $N?'$N3d$jEv$F$O! "8~$-$d; kJ}0L$K$O0MB8$7$^$;$s! #$=$N>uBV$O **set pm3d nolighting** $KBP1~$7$^$9! #0 lJ}! "%3%^%s%I **set pm3d lighting** $O! "0 lE@$NE@8w8;$+$i$N>HL@$+$i$N 50% $N8w$K$h$kC1=c$J 8w8;%b%G%k$rA*Br$7$^$9! #K~0O$NL@$k$5$KBP$9$k$=$N8w8;$N6/EY$O **set pm3d lighting primary <fraction>** $GD4@0$G$-$^$9! #H?<M8w (specular) $r4^$^$;$kEY9g$$$O! "$=$NHfN($N@_Dj$,$G$-$^$9:

```
    set pm3d lighting primary 0.50 specular 0.0   # %O%$%i%$%H$J$7
    set pm3d lighting primary 0.50 specular 0.6   # 6/$$%O%$%i%$%H
```

### **Pm3d** $N0LCV (position)

?'$N6JLL$OD1LL$+E70f ($3$N>19g$O3%?'/%+%i! <$NJ?LICO?^) $+6JLL>e$NE@$Nz :BI8 (3%?'/%+%i! <6JLL) $KIA$/ $3$H$,$G$-$^$9! #$=$NA*Br$O! "%*%W%7%g%s **at** $K! "**b**, **t**, **s** $N 6 $D$^$G$NAH9g$;$NJ8; zNs$r$D$1$F; XD j$9$k$3$H $G9T$($^$9! #Nc$($P **at b** $OD1LL$N$_$KIA2h$7$^$9$7! "**at st** $O: G=i$K6JLL$KIA$$$F<!$KE70fLL$K?'CO?^$rIA $-$^$9$7! "**at bstbst** $O... ??LLL\$JOC! "$3$s$J$b$N$O; H$$$^$;$s! #

EI$i$1$?; M3Q7A$O! "<!$+$i<!$X$HIA2h$5$1$F9T$-$^$9! #6JLL$rIA2h$9$k>19g (**at s**)! "8e$N; M3Q7A$,A0$N$b$N $K=E$J$j (>e=q$-$7) $^$9 (gnuplot $OEI$i$1$?B?3Q7A$NLV$N=E$J$j$NAj8_: nMQ$r7W; ;$9$k$h$&$J2>A [8=<B %D! <%k$G$O$"$j$^$;$s)! # :G=i$KAv: :$5$1$k%G! <%?$r: G=i$KIA$/$+: G8e$KIA$/$+$r@ZBX$ ($k%9%$%C%A%*%W%7%g %s **scansforward** $H **scansbackward** $r; n$7$F$_$F$/$@$5$$! #%G%U%)%k%H$O **scansautomatic** $G! "$3$1$O gnuplot <+?H$KAv: :$N=g$r?dB,$5$;$^$9! #0 lJ}$G! "%*%W%7%g%s **depthorder** $O; M3Q7A$N=g=x$r4 0A4$K: F9=@ .$7 $^$9! #EI$j$D$V$7$O?<$5=g$KJB$SJQ$($5$1$?8e$G9T$o$1! "$3$1$K$h$j$+$J$jJ#; ($J6JLL$G$b; k3PE*$J$b$N$K$9 $k$3$H$,$G$-$^$9! #>\: Y$O! "0J2<; 2>H: **pm3d depthorder (p. 159)**! #

### Av: :$N=gHV (scanorder)

%G%U%)%k%H$G$O! "pm3d $NEI$jDY$76JLL$r9=@ .$9$k; M3Q7A$O! "$=$1$i$,6JLL$N3J; RE@$K1h$C$F=P2q$&=gHV$KEI $jDY$5$1$^$9! #$3$N=gHV$O! "%*%W%7%g%s **scansautomatic**|**scansforward**|**scansbackward** $G@)8f$G$-$^$9! # $3$1$i$NAv: : (scan) %*%W%7%g%s$O! "0 lHL$K$O1 #LI=hM}$H$ON>N)$7$^$;$s! #

2 2s$NO"B3$9$kAv: :$GE@$N?t$,F1$8$G$J$+$C$?>19g! "; M3Q7A$NE@$N<h$j; O$a$r! "N>J}$NAv: :$N: G=i$+$i (**flush begin**) $K$9$k$+! ": G8e$+$i (**flush end**) $K$9$k$+! "??Cf$+$i (**flush center**) $K$9$k$+$r7hD j$7$J$1$1$P$$$1

$^$;$s!#**flush (center|end)** $O **scansautomatic** $H$CN>N)$;$:!"$h$C$F **flush center** $^$?$O **flush end** $r ;XDj$7$F **scansautomatic** $,@_Dj$5$l$?>l9g!"$=$l$OL58@$G **scansforward** $KJQ99$5$l$^$9!#

2 2s$NO"B3$9$kAv::$GE@$N?t$,F1$8$G$J$+$C$?>l9g!"8D!9$NAv::$GE@$,B-$j$J$$>l9g$K!"Av::$N:G8e$K?';03Q7A $rIA$/$+$I$&$+$r%*%W%7%g%s **ftriangles** $O;X<($7$^$9!#$3$l$O3j$i$+$J?'CO?^$N6-3&$rIA$/$N$K;H$o$l$^$9!#

gnuplot $O!"6JLL$NEI$jDY$7$K$*$$$F$O!"K\Ev$N1#LL=hM}$O9T$$$^$;$s$,!"$?$$$F$$$O1s$$$J}$+$i6a$$J}$X=g $K;M3Q7AMWAG$rEI$jDY$9$3$H$G==J,$J$G$-$"$,$j$K$J$j$^$9!#$3$N%b!<%I$O!"0J2<$N%*%W%7%g%s$r;H$&$3$H$G A*Br$G$-$^$9:

```
set pm3d depthorder hidden3d
```

%*%W%7%g%s **depthorder** $OEI$jDY$7;M3Q7A$X$N;X<($G!"%*%W%7%g%s **hidden3d** $OF1MM$K6-3&@~($b$7IA$/$J $i) $X$N;X<($G$9!#Bg0hE*$J%*%W%7%g%s$G$"$k **set hidden3d** $O!"pm3d 6JLL$K$O1F6A$7$J$$$3$H$KCm0U$7$F $/$@$5$$!#

### %/%j%C%T%s%0 (clipping)

;M3Q7A$N x,y :BI8$K4X$9$k%/%j%C%T%s%0$O 2 $D$NJ}K!$G9T$o$l$^$9!#**clip1in**: 3F;M3Q7A$NA4$F$N 4 E@$,Dj 5A$5$l$F$$$J$1$l$P$J$i$:!">/$J$/$H$b$=$N$&$A$N 1 E@$, x, y $NHO0O$K$*$5$^$C$F$$$J$1$l$P$J$j$^$;$s!# **clip4in**: 3F;M3Q7A$NA4$F$N 4 E@$, x, y $NHO0O$K$*$5$^$C$F$$$J$1$l$P$J$j$^$;$s!#

### ?'$N3d$jEv$F

### 3 Ns$N%G!<%? (x,y,z) $N>l9g:

?'$E$1$N@_Dj$O%+%i!<%\%C%/%9$NIA2h$HF1MM$K **set palette** $G7hDj$5$l$^$9!#0l$D$NIA2h$G$O0l$D$N%Q%l%C%H $N$_$,B8:_$7F@$^$9!#$$/$D$b$N6JLL$r0[$J$k%Q%l%C%H$GIA2h$9$k$K$O!"**origin** $H **size** $r8GDj$7$F **mutiplot** $r;H$&$3$H$G9T$($^$9!#=PNO%I%i%$%P$,MxMQ$G$-$k?'$r;H$$?T$/$7$F$7$^$&>l9g$K$O **set palette maxcolors** $r;H$&$3$H$rK:$l$:$K!#

IA2h$5$l$k3F pm3d ;M3Q7A$K$O0l$D$N3%?'/%+%i!<CM$,BP1~$7$^$9($=$l$O?'8{G[$G$O$J$/L5CO$N?'$G$9)!#$=$N CM$O!"**corners2color <option>** $K=>$C$F4 $D$N3Q$Nz :BI8$+$i7W;;$5$l$^$9!#**4 Ns$N%G!<%? (x,y,z,color)** $N>l9g:

4 NsL\$K%G!<%?$rM?$($?>l9g!"$=$l$rDL>o$OJL$K%Q%l%C%H$K3d$jEv$F$k3%?'3,D4CM$H$_$J$7$^$9!#8D!9$N;M3Q 7A$N:L?'$O>e$HF1MM$K9T$$$^$9$,!"?'$NCM$Oz $NCM$H$O@Z$jN%$5$l$^$9!#JL$N:L?'%*%W%7%g%s$K$h$j!"4 NsL\ $N%G!<%?$K RGB ?'$rM?$($k$3$H$b$G$-$^$9!#0J2<;2>H: **rgbcolor variable (p. 42)**!#$3$N>l9g!"IA2h%3%^ %s%I$O0J2<$N$h$&$K$9$kI,MW$,$"$j$^$9:

```
splot ... using 1:2:3:4 with pm3d lc rgb variable
```

M?$($i$l$?@aE@$KBP$7$F!"$=$N<~$j$N 4 $D$N@aE@$NJ?6Q2=$5$l$? (x,y) :BI8$+$i3Q$rF@$F;M3Q7A$r:n$C$F!"$= $N;M3Q7A$r@aE@$N?'$GEI$k!"$H$$$C$?$h$&$JB>$NIA2h%"%k%4%j%:%`$,>-Mh<BAu$5$l$k$+$b$7$l$^$;$s!#$3$l$O!" %$%a!<%8$NIA2h(2 <!85$N3J;R) $KBP$7$F$O **image** $H **rgbimage** %9%?%$%k$K$h$C$F4{$K9T$J$o$l$F$$$^$9!#

z $NCM$NHO0O$H6JLL$N?'$NCM$NHO0O$O!"z $H cb $K4X$9$k **set log** F1MM!"**set zrange** $H **set cbrange** $K$h$C$F FHN)$KD4@0$7F@$k$3$H$KCm0U$7$F$/$@$5$$!#?'CO?^$O cb <4$N$_$GD4@a$5$l$^$9!#0J2<$b;2>H: **set view map (p. 182)**,**set colorbox (p. 121)**!#

### Corners2color

pm3d 6JLL$N3F;M3Q7A$N?'$O!"$=$N 4 $D$ND:E@$N?'$NCM$K4p$E$$$F3d$jEv$F$i$l$^$9!#<option> $O'mean' (%G %U%)%k%H)!"'geomean', 'harmean', 'rms', 'median' $G!"6JLL$N%+%i!<$NJ?3j2=$K4v$D$+$N<oN`$rM?$(!"'min','max' $O$=$l$>$l:G>.CM!":GBgCM$rA*Br$7$^$9!#$3$l$i$O1TIR$J!"$"$k$$$O5^7c$J%T!<%/CM$r;}$D$h$&$J%T%/%;%k%$ %a!<%8$d?'CO?^$r:n$k$H$-$K$OI,MW$"$j$^$;$s!#$=$N$h$&$J>l9g$K$O!"$`$7$m%*%W%7%g%s 'c1', 'c2', 'c3', 'c4' $r;H$C$F!";M3Q7A$N?'$N3dEv$K$?$@0l$D$N3Q$Nz :BI8$r;H$&$h$&$K$9$l$P$$$$$G$7$g$&!#$I$N3Q$, 'c1' $KBP1~ $9$k$N$+$rCN$k$?$a$K$O2?2s$+<B83$7$F$_$kI,MW$,$"$k$G$7$g$&!#$=$N8~$-$OIA2h$NJ}8~$K0MB8$7$F$$$^$9!# pm3d %"%k%4%j%:%`$O!"%+%i!<6JLL$rF~NO%G!<%?E@$NHO0O$N30$K$OIA$+$J$$$N$G!"%*%W%7%g%s 'c<j>' $O!"3J ;R$N 2 $D$N$X$j$K1h$C$?%T%/%;%k$,!"$I$N;M3Q7A$N?'$K$b4sM?$7$J$$!"$H$$$&7k2L$r$b$?$i$7$^$9!#Nc$($P!" pm3d %"%k%4%j%:%`$r 4x4 $N%G!<%?E@$N3J;R$KE,MQ$9$k%9%/%j%W%H **demo/pm3d.dem** (@'Hs8+$F$/$@$5$$) $G$O!"(4-1)x(4-1)=9 ?'$7$+$J$$D9J}7A$,@8@.$5$l$^$9!#

### Border

%*%W%7%g%s **set pm3d border {line-properties}** $O!"3F;M3Q7A$N6-3&@~$r!";M3Q7A$,IA2h$5$l$F$"$k$h$&$KIA2h$7$^$9!#DL>o$3$l$O!"5<;wE*$J1#@~=hM}$r9T$&$?$a$K!"%*%W%7%g%s **depthorder** $H$H$b$K;HMQ$7$^$9!#pm3d %0%i%U$G$O!"Bg0hE*$J%*%W%7%g%s **set hidden3d** $O2?$N8z2L$b@8$^$J$$$3$H$KCm0U$7$F$/$@$5$$!#%G%U%)%k%H$N@~$NB0@-(?'!"I}) $r!"%-!<%o!<%I border $N8e$m$K%*%W%7%g%s$H$7$F8e$m$K$D$1$^$9!#$=$N%G%U%)%k%HCM$O!"$=$N8e$N splot %3%^%s%I$GJQ99$G$-$^$9!#

?d>)$9$k;HMQNc:

```
set pm3d at s depthorder border lw 0.2 lt black
unset hidden3d
unset surf
splot x*x+y*y linecolor rgb "blue"   # $3$&$7$J$$$H9u
```

Cm Hs?d>)$N%*%W%7%g%s **set pm3d hidden3d N** $b$^$@;H$($^$9$,!"$3$l$O**set pm3d border ls N** $HF1$8$G$9!#

### Interpolate

%*%W%7%g%s **interpolate m,n** $O!"$h$j:Y$+$JLVL\$r:n$k$?$a$K3J;RE@4V$rJd4V$7$^$9!#%G!<%?IA2h$KBP$7$F$O!"$3$l$O?'$N6JLL$r3j$i$+$K$7!"$=$N6JLL$N@m$j$rJd@5$7$^$9!#4X?tIA2h$KBP$7$F$O!"$3$NJd4V$O$[$H$s$I0UL#$O$"$j$^$;$s$+$i!"4X?tIA2h$N>l9g$OIaDL**samples** $d **isosamples** $r;H$C$FI8K\?t$rA}2C$5$;$k$N$,$$$$$G$7$g$&!#

@5$N m, n $KBP$7$F$O3F;M3Q7A!"$^$?$O;03Q7A$O!"$=$l$>$l$NJ}8~$K m 2s!"n 2sJd4V$5$l$^$9!#Ii$N m, n $G$OJd4V$NIQEY$O!">/$J$/$H$b |m|, |n| E@$,IA2h$5$l$k$h$&$KA*Br$5$l$^$9!#$3$l$OFCJL$J3J;R4X?t$H8+$J$9$3$H$,$G$-$^$9!#

Cm0U: **interpolate 0,0** $O!"<+F0E*$K:GE,$JJd4V6JLIE@?t$rA*Br$7$^$9!#

Cm0U: corners2color $G4v2?J?6Q (geomean) $N$h$&$JHs@~7AI>2A$,@_Dj$5$l$F$$$?$H$7$F$b!"8=:_$N?'$NJd4V$O>o$K@~7AJd4V$G9T$o$l$^$9!#

Hs?d>)$J%*%W%7%g%s

$3$N%3%^%s%I$K$O%*%W%7%g%s {transparent|solid} $b;H$o$l$F$$$^$7$?!#8=:_$O!"F1$88z2L$r$=$l$>$l **set grid {front|layerdefault}** $K$h$C$FF@$k$3$H$,$G$-$^$9!#

5l<0$N%3%^%s%I **set pm3d map** $O0J2<$N0lO"$N$b$N$HF1CM$G$9: **set pm3d at b; set view map scale 1.0; set style data pm3d;set style func pm3d;**

## %Q%l%C%H (palette)

%Q%l%C%H$O!"**pm3d** $G!"%+%i!<Ey9b@~$dB?3Q7A!"%+%i!<%R%9%H%0%i%`!"?'8{G[$NGX7J!"$=$NB><BAu$5$l$F$$$k!"$"$k$$$O<BAu$5$l$k$b$N$NEI$j$D$V$7$G;H$o$l$k!"?'$N5-21>l=j$G$9!#$3$3$G$O$=$l$O3j$i$+$G"O"B3E*$J"%+%i!<$d3%?'3,D4$N%Q%l%C%H$r0UL#$7$^$9$,!"$=$l$rC1$K%Q%l%C%H$H8F$V$3$H$K$7$^$9!#

%+%i!<%Q%l%C%H$O!"B?3Q7A$N?'$NEI$j$D$V$7$H3j$i$+$J?'$N%Q%l%C%H$r%5%]!<%H$7$?=PNO7A<0$rI,MW$H$7!"$=$l$O8=:_!"**pm3d** $G0lMwI=<($5$l$k=PNO7A<0$G;HMQ2DG=$G$9!#?'$NCM$NHO0O$O!"**set cbrange** $H **set log cb** $GFHN)$KD4@02DG=$G$9!#%+%i!<%Q%l%C%HA4BN$O **colorbox** Cf$KI=<($5$l$^$9!#

=q<0:

```
set palette
set palette {
           { gray | color }
           { gamma <gamma> }
           {   rgbformulae <r>,<g>,<b>
             | defined { ( <gray1> <color1> {, <grayN> <colorN>}... ) }
             | file '<filename>' {datafile-modifiers}
             | functions <R>,<G>,<B>
```

```
                  }
                  { cubehelix {start <val>} {cycles <val>} {saturation <val>} }
                  { model { RGB | HSV | CMY | XYZ } }
                  { positive | negative }
                  { nops_allcF | ps_allcF }
                  { maxcolors <maxcolors> }
                }
      show palette
      show palette palette <n> {{float | int}}
      show palette gradient
      show palette fit2rgbformulae
      show palette rgbformulae
      show colornames
```

**set palette** $O($9$J$o$A%*%W%7%g%s$J$7$G$O) %G%U%)%k%H$NCM$r@_Dj$7$^$9!#$=$l0J30$N>l9g!"%*%W%7%g%s$O G$0U$N=g$KM?$($k$3$H$,$G$-$^$9!#**show palette** $O!"8=:_$N%Q%l%C%H$NB0@-$rI=<($7$^$9!#

**show palette gradient** $O!"%Q%l%C%H$N8{G[ (gradient) $NDj5A$, ($=$l$,E,@Z$G$"$l$P) I=<($5$l$^$9!# **show palette rgbformulae** $O!"Dj5A:Q$GMxMQ$G$-$k!"3%?'CM$+$i%+%i!<$X$NJQ49x<0$,I=<($5$l$^$9!#**show colornames** $O!"G'<1$G$-$k?'L>$rI=<($7$^$9!#

**show palette palette <n>** $O!"<n> 8D$NN%;6E*$J?'$r;}$D%Q%l%C%H$N!"8=:_$N%Q%l%C%H$N@_Dj$K$h$C$F7W ;;$5$l$k RGB $NCM$NAH$H%Q%l%C%H$NI=$r!"2hLL!"$^$?$O **set print** $G;XDj$5$l$?%U%!%$%k$K=q$-=P$7$^$9!#%G %U%)%k%H$N9-$$I=$O!"DI2C$N%*%W%7%g%s float $^$?$O int $K$h$C$F!"3 Ns$N [0..1] $N<B?tCM$@$1$K$9$k$+ [0..255] $N@0?tCM$@$1$K$9$k$+$r$=$l$>$l;XDj$G$-$^$9!#$3$NJ}K!$G gnuplot $N%+%i!<%Q%l%C%H$r!"Octave $N$h$&$J B>$N2hA|%"%W%j%1!<%7%g%s$KEO$9$3$H$,$G$-$^$9!#$3$NB>$K$b!"%3%^%s%I **test palette** $G!"8=:_$N%Q%l%C%H$N R,G,B @.J,$NBP1~>uBV (profile) $rIA2h$7$=$NCM$r%G!<%?%V%m%C%/ $PALETTE $K;D$5$;$k$3$H$b$G$-$^$9!#

0J2<$N%*%W%7%g%s$O!"?'IU$1$NB0@-$r7hDj$7$^$9!#

$3$N%Q%l%C%H$r;HMQ$9$k?^$O!"**gray** $+ **color** $K$J$j$^$9!#Nc$($P!"**pm3d** %+%i!<6JLL$G$O!"HO0O [min_z,max_z] $,3%?'$NHO0O [0:1] $KBP1~$7$F$$$F!"Hy>.6JLL;M3Q7A$N 4 $D$N3Q$N z :BI8$NJ?6QCM$r$3$NHO0O$NCf$KBP1~$5 $;$k$3$H$G3FHy>.ItJ,$N3%?'$NCM (gray) $,F@$i$l$^$9!#$3$NCM$O!"3%?'3,D4$N?'CO?^$G$N3%?'$NCM$H$7$FED> @\;H$&$3$H$,$G$-$^$9$7!"%+%i!<$N?'CO?^$G$O!"$=$N3%?'$NCM$+$i (R,G,B) $X$NJQ49!"$9$J$o$A [0:1] $+$i ([0:1],[0:1],[0:1]) $X$N<LA|$,;H$o$l$^$9!#

4pK\E*$K!"2 <oN`$N0[$J$k<LA|J}<0$,MxMQ2DG=$G$9: 1 $D$O3%?'$+$i%+%i!<$X$N2r@OE*$J8x<0!"$b$&0l$D$O N%;6E*$JBP1~I=$NJd4V$K$h$k$b$N$G$9!#**palette rgbformulae** $H **palette functions** $,2r@OE*$J8x<0MQ$G!" **palette defined** $H **palette file** $,Jd4VI=MQ$G$9!#**palette rgbformulae** $O postscript =PNO$N%5%$%:$r>.$5 $/$9$k$3$H$,$G$-$^$9!#

%3%^%s%I **show palette fit2rgbformulae** $O!"8=:_$N **set palette** $K:G$bNI$/BP1~$9$k **set palette rgbformulae** $r8+$D$1=P$7$^$9!#EvA3!"$=$l$O rgbformulae %Q%l%C%H0J30$KBP$7$F$b0UL#$r;}$A$^$9!#$3$N%3%^%s%I$O<g$K!"%Q%l%C%H$N rgbformulae Dj5A$, gnuplot $HF1$8J*$r;H$C$F$$$k3 0It%W%m%0%i%`!"Nc$($P zimg $J $I$K$H$C$FM-MQ$G$9 ( http://zimg.sourceforge.net

)!#

**set palette gray** $O!"3%?'3,D4$N$_$N%Q%l%C%H$K$7!"**set palette rgbformulae**, **set palette defined**, **set palette file**, **set palette functions** $O%+%i!<%Q%l%C%H$K$7$^$9!#3%?'%Q%l%C%H$+$iD>A0$N%+%i!<%Q%l%C%H$X!" **set palette color** $G4JC1$KI|5"$G$-$^$9!#

**set palette gamma <gamma>** $K$h$k<+F0E*$J%,%s%^Jd@5$O!"3%?'$N%Q%l%C%H (**set palette gray**) $H!" **cubehelix** %+%i!<%Q%l%C%H7A<0$K9T$o$l$^$9!#gamma = 1 $N>l9g$O!"@~7A$N8wEY8{G[$r@8@.$7$^$9!#0J2<;2 >H:**test palette (p. 201)**!#

=PNO7A<0$NB?$/$O!"M-8B8D$N?'?t$7$+%5%]!<%H$7$F$$$^$;$s (Nc$($P gif $G$O 256 8D)!#%G%U%)%k%H$N gnuplot $N@~<o?'$r3d$jEv$F$?8e$N;D$j$NM-8z$J?'NN0h$O!"%G%U%)%k%H$G$O pm3d MQ$KJ]B8$5$l$^$9!#$h$C$F!"J#?t $N%Q%l%C%H$r;HMQ$9$k$h$&$J multiplot $O!":G=i$N%Q%l%C%H$,$9$Y$F$NM-8z$J?'$NG[CV$H$7$F;HMQ$5$l$F$k$N $G!"<:GT$7$F$7$^$&$G$7$g$&!#$3$N$h$&$J@)8B$O!"==J,>.$5$$CM N $G **set palette maxcolors <N>** $r;H$& $3$H$G4KOB$G$-$^$9!#$3$N%*%W%7%g%s$O!"N 8D$NN%;6E*$J?'$r!"O"B3E*$J%Q%l%C%H$+$iEy4V3V$J%5%s%W%j%s%0 $GA*Br$7$^$9!#ITEy4V3V$J N 8D$NN%;6?'$r;H$$?$$>l9g$O!"0l$D$NO"B3E*$J%Q%l%C%H$NBe$o$j$K **set palette defined** $r;HMQ$7$F$/$@$5$$!#

RGB ?'6u4V$,:n6H$r9T$&$N$K>o$K$b$C$H$bM-MQ$J?'6u4V$G$"$k$H$O8B$i$J$$! "$H$$$&M}M3$G! "?'6u4V$O **model** $r;H$&$3$H$G! "**RGB**, **HSV**, **CMY**, **XYZ** $N$$$:$1$+$KJQ99$G$-$^$9! #RGB 0J30$N?'6u4V$G$O **set palette defined** $NI=$G?'L>$r;H$&$H! "$=$1$O$*$+$7$J?'$K$J$j$^$9! #A4$F$N@bL@$O RGB ?'6u4VMQ$K=q$$$F$"$j$^$9 $,! "$=$1$>$1$N?'6u4V$G! "Nc$($P **R** $O **H**, **C**, **Y**, **X** $N$3$H$r0UL#$9$k$3$H$KCm0U$7$F$/$@$5$$ (**G**, **B** $bF1MM)! #

A4$F$N?'6u4V$G! "A4$F$NCM$O [0,1] $K@)8B$5$1$F$$$^$9! #

RGB $O@V! "NP! "@D$r! "CMY $O?e?' (Cyan)! ";g (Magenta)! "2+ (Yellow) $r! "HSV $O?'Aj (Hue)! ":LEY (Saturation)! "L@EY (Value) $r$=$1$>$10UL#$7$^$9! #XYZ $O 'Commission Internationale de l'Eclairage' (9q:]>HL@0Q0w2q) $,Dj5A$7$? CIE ?'%b%G%k$N 3 $D$N86;I7cCM$G$9! #?'%b%G%k$N$h$j>\$7$$>pJs$K$D$$$F$O0J2<$r;2>H$7$F$/$@$5$$: http://en.wikipedia.org/wiki/Color_space

## Rgbformulae

**rgbformulae** MQ$K$O 3 $D$NE,@Z$J3d$jEv$F4X?t$,A*$P$1$kI,MW$,$"$j$^$9! #$3$NA*Br$O **rgbformulae** **<r>,<g>,<b>** $rDL$7$F9T$o$1$^$9! #;H$&$3$H$,$G$-$k3d$jEv$F4X?t$N0lMw$O **show palette rgbformulae** $G8+$k$3$H$,$G$-$^$9! #%G%U%)%k%H$O **7,5,15** $G! "B>$NNc$H$7$F$O **3,11,6**, **21,23,3**, **3,23,21** $J$I$,$"$j$^$9! # **3,-11,-6** $N$h$&$JI i$NCM$O! "5U$N%+%i! <$r0UL#$7$^$9 ($9$J$o$A! "1-gray $r$=$N4X?t$KBeF~$7$^$9)! #

RGB $N?'6u4V$G$O! "$$$/$D$+$NNI$$3d$jEv$F8x<0$,$"$j$^$9:

```
7,5,15   ... EAE}E* pm3d (9u-@D-@V-2+)
3,11,6   ... NP-@V-;g
23,28,3  ... 3$ (NP-@D-Gr); B>$NAH$_9g$o$;$b;n$7$F$_$F$/$@$5$$
21,22,23 ... 29EY?' (9u-@V-2+-Gr)
30,31,32 ... Gr9u$N%+%i!<I=<(2= (9u-@D-;g-2+-Gr)
33,13,10 ... Fz (@D-NP-2+-@V)
34,35,36 ... AFM 29EY?' (9u-@V-2+-Gr)
```

HSV ?'6u4V$G$N%U%k%+%i!<%Q%l%C%H:

```
3,2,2    ... @V-2+-NP-?e?'-@D-;g-@V
```

**rgbformulae** $H$$$&L>A0$G8F$P$1$F$$$F$b! "Nc$NDL$j! "$=$1$i$N4X?t$O<B:]$K$O <H>,<S>,<V> $^$?$O <X>,<Y>,<Z>, ... $H$$$C$??'$N@.J,$r7hDj$9$k$+$b$7$1$J$$$H$$$&$3$H$KCm0U$7$F$/$@$5$$! #

?^$N?'$rH?E>$5$;$k$K$O **positive** $d **negative** $r;H$C$F$/$@$5$$! #

B>$N?'BN7O$KBP$9$k:G$bNI$$rgbformulae $N=89g$O! "0J2<$N%3%^%s%I$G8+$D$1$k$3$H$,$G$-$k$3$H$r3P$($F$*$$$F$/$@$5$$! #

```
show palette fit2rgbformulae
```

## Defined

3%?'$+$i RGB $X$NBP1~$O **palette defined** $r;H$&$3$H$G<jF0$G@_Dj$G$-$^$9: ?'8{G[ (gradient) $O RGB $N CM$rM?$($k$?$a$KDj5A$5$1;HMQ$5$1$^$9! #8{G[$O! "[0,1] $N3%?'CM$+$i [0,1]x[0,1]x[0,1] $N RGB 6u4V$X$N! "6h J,E*$K@~7A$J<IA|$G$9! #$=$N@~7AJd4V$K;H$o$1$k3%?'CM$H RGB CM$NAH$r;XDj$9$kI,MW$,$"$j$^$9:

=q<0:

```
set palette  defined { ( <gray1> <color1> {, <grayN> <colorN>}... ) }
```

<grayX> $O [0,1] $K3d$jEv$F$i$1$k$Y$-3%?'CM$G! "<colorX> $O$=$1$KBP1~$9$k RGB ?'$G$9! #%+%i!<CM$O 3 <oN`$NJ}K!$G;XDj$9$k$3$H$,$G$-$^$9:

```
<color> :=  { <r> <g> <b> | '<color-name>' | '#rrggbb' }
```

@V! "NP! "@D$KBP1~$9$k6uGr$G6h@Z$i$1$? 3 $D$NCM ($=$1$>$1 [0,1] Fb)! "0zMQId$G$/$/$i$1$??'L>! "$^$?$O0zMQ Id$G$/$/$i$1$? X 7A<0$N;XDjJ}<0! "$N$$$:$1$+$G$9! #8{G[$NDj5A$G$O! "$3$1$i$N 3 <o$N7?$r<+M3$KAH$_9g$o$;$k$3$H$,$G$-$^$9$,! "?'6u4V$H$7$F RGB $G$J$$$b$N$,A*Br$5$1$?>19g?'L> "red" $O>/$70c$C$?$b$N$K$J$k$G$7$g$&! #;HMQ$G$-$k?'L>$O **show colornames** $G$=$N0lMw$r8+$k$3$H$,$G$-$^$9! #

<r> $H=q$$$F$b! "HSV ?'6u4V$G$O$=$1$O <H> @.J,$r! "CIE-XYZ 6u4V$G$O <X> $r! "$H$$$C$?$h$&$KA*Br$5$1$?%+%i!<%b%G%k$K0MB8$7$F0UL#$,0c$&$3$H$KCm0U$7$F$/$@$5$$! #

<gray> $NCM$O<B?t$N>:=g$KJB$Y$kI,MW$,$"$j$^$9!#$=$NNs$NCM$O<+F0E*$K[0,1] $KJQ49$5$l$^$9!#

%+%C%3$D$-$N8{G[$NDj5A$J$7$G**set palette defined** $H$7$?>l9g!"RGB ?'6u4V$K$7!"$"$i$+$8$a@_Dj$5$l$?%U%k%9%Z%/%H%k?'8{G[$r;HMQ$7$^$9!#8{G[$rI=<($9$k$K$O**show palette gradient** $r;HMQ$7$F$/$@$5$$!#

Nc:

3%?'$N%Q%l%C%H(Lr$KN)$?$J$$$,6571E*$J) $r@8@.$9$k$K$O:

```
set palette model RGB
set palette defined ( 0 "black", 1 "white" )
```

@D2+@V$N%Q%l%C%H(A4$F$,Ey2A$N) $r@8@.$9$k$K$O:

```
set palette defined ( 0 "blue", 1 "yellow", 2 "red" )
set palette defined ( 0 0 0 1, 1 1 1 0, 2 1 0 0 )
set palette defined ( 0 "#0000ff", 1 "#ffff00", 2 "#ff0000" )
```

Fz$N$h$&$J%Q%l%C%H$r@8@.$9$k$K$O:

```
set palette defined ( 0 "blue", 3 "green", 6 "yellow", 10 "red" )
```

HSV ?'6u4V$G$N%U%k%+%i!<%9%Z%/%H%k:

```
set palette model HSV
set palette defined ( 0 0 1 1, 1 1 1 1 )
set palette defined ( 0 0 1 0, 1 0 1 1, 6 0.8333 1 1, 7 0.8333 0 1)
```

MATLAB $G;H$o$l$k%G%U%)%k%H%Q%l%C%H$N6a;w:

```
set pal defined (1 '#00008f', 8 '#0000ff', 24 '#00ffff', \
                 40 '#ffff00', 56 '#ff0000', 64 '#800000')
```

Ey4V3V$J>/$7$N?'$@$1$N%Q%l%C%H$r@8@.$9$k$K$O:

```
set palette model RGB maxcolors 4
set palette defined ( 0 "yellow", 1 "red" )
```

'8rDL?.9f' (3j$i$+$G$O$J$/ gray = 1/3, 2/3 $GD7$S$r;}$D):

```
set palette model RGB
set palette defined (0 "dark-green", 1 "green", \
                     1 "yellow",     2 "dark-yellow", \
                     2 "red",        3 "dark-red" )
```

## Functions

?'$N3d$jEv$F$N R(gray), G(gray), B(gray) $N 3 $D$N4X?t$rM?$($k$K$O**set palette functions <Rexpr>, <Gexpr>, <Bexpr>** $r;H$C$F$/$@$5$$!#$=$l$i$N 3 $D$N4X?t$NJQ?t$O!"[0,1] $NCM$r<h$kJQ?t **gray** $G$"$j!"$=$NCM$b [0,1] $NCf$K<h$kI,MW$,$"$j$^$9!#<Rexpr> $O!"HSV ?'6u4V$,A*Br$5$l$F$$$k>l9g$O!"H $NCM$rI=$9<0$G$J$1$l$P$$$1$J$$$3$H$KCm0U$7$F$/$@$5$$(B>$N<0!"$^$?$OB>$N?'6u4V$G$bF1MM$G$9)!#

Nc:

%U%k%+%i!<%Q%l%C%H$r@8@.$9$k$K$O:

```
set palette model HSV functions gray, 1, 1
```

9u$+$i6b?'$X$NNI$$%Q%l%C%H:

```
set palette model XYZ functions gray**0.35, gray**0.5, gray**0.8
```

%,%s%^Jd@5$NGr9u$N%Q%l%C%H:

```
gamma = 2.2
color(gray) = gray**(1./gamma)
set palette model RGB functions color(gray), color(gray), color(gray)
```

### Gray

**set palette gray** $O! "0.0 = 9u$+$i 1.0 = Gr$X$N3%?'3,D4 (%0%l%$%9%1!<%k) %Q%l%C%H$K@Z$jBX$($^$9! #3%?'3,D4%Q%l%C%H$+$i! "D>A0$N%+%i!<%Q%l%C%H$K$^$?La$9$K$O! "**set palette color** $H$9$k$N$,4JC1$G$9! #

### Cubehelix

%*%W%7%g%s "cubehelix" $O$"$k%Q%l%C%HB2$rDj5A$7$^$9$,! "$3$l$O! "3%?'3,D4CM$, 0 $+$i 1 $KA}2C$9$k$N$KH<$J$$! "@5L#$N8wEY$,C1D4$KA}2C$9$k$N$HF1;~$K! "?'Aj (hue) $,I8=`?'Aj4D$K=>$C$FJQ2=$7$^$9! #

```
D A Green (2011) http://arxiv.org/abs/1108.5083
```

**start** $O! "?'Aj4D$K1h$C$?3+;OE@$r%i%8%"%sC10L$G7hDj$7$^$9! #**cycles** $O! "%Q%l%C%H$NHO0O$rEO$C$F?'Aj4D$r2?2s2s$k$+$r7hDj$7$^$9! #**saturation** (:IEY) $,Bg$-$$$H! "$h$j$"$6$d$+$J?'$K$J$j$^$9! #1 $h$jBg$-$$:IEY$O! "8D! 9$N RGB @.J,$r%/%j%C%T%s%0$9$k$3$H$K$J$j! "8wEY$OC1D4$G$O$J$/$J$C$F$7$^$$$^$9! #**set palette gamma** $b%Q%l%C%H$K1F6A$rM?$($^$9! #%G%U%)%k%HCM$O0J2<$NDL$j$G$9! #

```
set palette cubehelix start 0.5 cycles -1.5 saturation 1
set palette gamma 1.5
```

### File

**set palette file** $O4pK\E*$K **set palette defined (<gradient>)** $HF1$8$G! "$3$N <gradient> $,%G!<%?%U%!%$%k$+$iFI$_9~$^$l$^$9! #4 Ns (gray, R,G,B) $+$^$?$O 3 Ns (R,G,B) $N%G!<%?$, **using** %G!<%?%U%!%$%k=$>~;R$K$h$C$FA*Br$5$l$kI,MW$,$"$j$^$9! #3 Ns$N>l9g! "9THV9f$, gray $NCM$H$7$F;H$o$l$^$9$,! "$=$N gray $NHO0O$O<+F0E*$K [0,1] $K%9%1!<%kJQ49$5$l$^$9! #%U%!%$%k$OD>L>o$N%G!<%?%U%!%$%k$H$7$FFI$^$l$k$N$G! "A4$F$N%G!<%?%U%!%$%k=$>~;R$,;H$($^$9! #Nc$($P HSV ?'6u4V$,A*Br$5$l$F$$$k>l9g$K$O! "**R** $O<B:]$K$O **H** $r;X$9$H$$$&$3$H$KCm0U$7$F$/$@$5$$! #

Nc$K$h$C$F! "<filename> $, '-' $N>l9g$O! "%G!<%?$,%$%s%i%$%s7A<0$G0z$-B3$$$FM?$($i$l! "0l$D$N **e** $N$_$N9T$G$=$l$,=*N;$9$k$3$H$r0UL#$7$^$9! #

8{G[ (gradient) $rI=<($9$k$K$O **show palette gradient** $r;HMQ$7$F$/$@$5$$! #

Nc:

RGB $N%Q%l%C%H$r [0,255] $NHO0O$GFI$_9~$`:

```
set palette file 'some-palette' using ($1/255):($2/255):($3/255)
```

Ey5wN%$NFz?' (@D-NP-2+-@V) %Q%l%C%H:

```
set palette model RGB file "-"
0 0 1
0 1 0
1 1 0
1 0 0
e
```

%P%$%J%j%Q%l%C%H%U%!%$%k$bF1MM$K%5%]!<%H$5$l$F$$$^$9! #0J2<;2>H: **binary general (p. 87)**! #R,G,B $N double $N%G!<%?$N 64 8D$N 3 $DAH$r%U%!%$%k palette.bin $K=PNO$7! "$=$l$rFI$_9~$`Nc:

```
set palette file "palette.bin" binary record=64 using 1:2:3
```

### %,%s%^Jd@5 (gamma correction)

3%?'$NG[?'$KBP$9$k%,%s%^Jd@5$O **set palette gamma <gamma>** $G ON $K$G$-$^$9! #<gamma> $N%G%U%)%k%H$O 1.5 $G! "$3$l$OB?$/$N=PNO7A<0$KE,@Z$JCM$G$9! #

%,%s%^Jd@5$O! "cubehelix %+%i!<%Q%l%C%H7A<0$K$OE,MQ$5$l$^$9$,! "B>$N?'7A<0$K$OE,MQ$5$l$^$;$s! #$7$+$7! "L@<($E*$J?'4X?t$K%,%s%^Jd@5$r<BAu$9$k$N$OF$q$7$/$"$j$^$;$s! #

Nc:

```
set palette model RGB
set palette functions gray**0.64, gray**0.67, gray**0.70
```

Jd4V$5$l$?8{G[$r;H$C$F%,%s%^Jd@5$r9T$&$K$O!"E,Ev$J%+%i!<$KCf4V$NCM$r;XDj$7$^$9!#

```
set palette defined ( 0 0 0 0, 1 1 1 1 )
```

$NBe$o$j$KNc$($P0J2<$r;XDj$7$F$/$@$5$$:

```
set palette defined ( 0 0 0 0, 0.5 .73 .73 .73, 1 1 1 1 )
```

$^$?$O!"@~7AJd4V$,"%,%s%^Jd@5" $NJd4V$K==J,NI$/E,9g$9$k$^$G$h$jNI$$Cf4V$NE@$rC5$7$F$/$@$5$$!#

### Postscript

postscript %U%!%$%k$N%5%$%:$r>.$5$/$9$kL\E*$G!"3%?'$N51EYCM!"$=$7$FA4$F$G$O$J$$$$$/$D$+$N7W;;$5$l$? RGB $N51EYCM$,$=$N%U%!%$%kCf$K=q$+$l$^$9!#@.J,4X?t$O postscript 8@8l$GD>@\%3!<%I2=$5$l!"pm3d $NIA2h$ND>A0$K%X%C%@$H$7$F$*$+$l$^$9!#/g $d /cF $NDj5A$r;2>H$7$F$/$@$5$$!#DL>o$=$NDj5A$r$=$NCf$K=q$/$3$H$O!"3 $D$N<0$N$_$,;H$o$l$k>l9g$K0UL#$r; }$A$^$9!#$7$+$7!"multiplot $d$=$NB>$NM}M3$G postscript %U%!%$%kCf$N$=$NJQ494X?t$rD>@\<j$GJT=8$7$?$$$H;W$&$+$bCN$l$^$;$s!#$3$l$,%G%U%)%k%H$N%*%W%7%g%s **nops_allcF** $G$9!#%*%W%7%g%s **ps_allcF** $r;H$&$H!"A4$F$N8x<0$NDj5A$, postscript %U%!%$%kCf$K=q$+$l$^$9!#0l$D$N%0%i%UCf$G!"0[$J$k6JLL$K0[$J$k%Q%l%C%H$r; }$?$;$?$$$H$$$&L\E*$G postscript %U%!%$%k$rJT=8$7$?$$>l9g$K!"$3$N%*%W%7%g%s$K4X?4$r; }$D$G$7$g$&!#$=$N5!G=$O!"**origin** $H **size** $r8GDj$7$F **multiplot** $r;H$&$3$H$G<B8=$G$-$k$G$7$g$&!#

pm3d 6JLL$r PostScript %U%!%$%k$X=q$$$F$$$k>l9g!"gnuplot $KIUB0$9$k awk %9%/%j%W%H **pm3dCompress.awk** $r;H$&$3$H$G!"$=$N%U%!%$%k%5%$%:$r 50% $^$G>.$5$/$G$-$k$+$b$7$l$^$;$s!#%G!<%?$,;M3Q7A$N3J;R>u$K$J$C$F$$$k>l9g$O!"%9%/%j%W%H **pm3dConvertToImage.awk** $r;H$&$3$H$G$h$jBg$-$J05=IN($,F@$i$l$k2DG=@-$,$"$j$^$9!#;HMQK!:

```
awk -f pm3dCompress.awk thefile.ps >smallerfile.ps
awk -f pm3dConvertToImage.awk thefile.ps >smallerfile.ps
```

## Pointinterval $NH"%5%$%: (pointintervalbox)

@~B0@- **pointinterval**, **pointnumber** $O!"IA2h%9%?%$%k **linespoints** $G$N$_;H$o$l$^$9!#pointinterval $d pointnumber $NCM$rIi!"Nc$($P -N $H$9$k$H!"E@$N5-9f$rIA$/A0$K!"3FE@$N5-9f$N8e$m$NH"(<B:]$K$O1_) $NItJ,$rGX7J?'$GEI$j$D$V$9$3$H$G>C$7$^$9!#%3%^%s%I **set pointintervalbox** $O$=$N>C$9NN0h$NBg$-$5 (H>7B) $r@)8f$7$^$9!#;XDj$9$kCM$O%G%U%)%k%H$NH>7B (= pointsize) $KBP$9$kG\N($G$9!#

## E@%5%$%: (pointsize)

%3%^%s%I **set pointsize** $OIA2h$G;H$o$l$kE@$NBg$-$5$rJQ99$7$^$9!#

=q<0:

```
set pointsize <multiplier>
show pointsize
```

%G%U%)%k%H$O 1.0 G\$G$9!#2hA|%G!<%?=PNO$G$O!"Bg$-$$%]%$%s%H%5%$%:$NJ}$,8+$d$9$$$G$7$g$&!#

0l$D$NIA2h$KBP$9$k%]%$%s%H%5%$%:$O **plot** %3%^%s%I$N>e$G$bJQ99$G$-$^$9!#>\:Y$O!"0J2<;2>H: **plot with (p. 106)**!#

%]%$%s%H%5%$%:$N@_Dj$O!"I,$:$7$bA4$F$N=PNO7A<0$G%5%]!<%H$5$l$F$$$k$o$1$G$O$J$$$3$H$KCm0U$7$F$/$@$5$$!#

## 6K:BI8%b!<%I (polar)

%3%^%s%I **set polar** $O%0%i%U$NIA2hJ}K!$r xy D>8r:BI87O$+$i6K:BI87O$KJQ99$7$^$9!#

=q<0:

```
set polar
unset polar
show polar
```

6K:BI8%b!<%I$G$O!"2>JQ?t (t) $O3QEY&H$r0UL#$7$^$9!#t $N%G%U%)%k%H$NHO0O$O [0:2*pi] $G$9$,!"C10L$H$7$FEY$,A*Br$5$l$F$$$l$P [0:360] $H$J$j$^$9 (0J2<;2>H: **set angles (p. 112)**)!#

%3%^%s%I **unset polar** $OIA2hJ}K!$r%G%U%)%k%H$N xy D>8r:BI87O$KLa$7$^$9!#

**set polar** %3%^%s%I$O **splot** $G$O%5%]!<%H$5$l$F$$$^$;$s!#**splot** $KBP$9$kF1MM$N5!G=$K4X$7$F$O!"0J2<;2>H: **set mapping (p. 146)**!#

6K:BI8%b!<%I$G$O t $N?t<0$N0UL#$O r=f(t) $H$J$j!"t $O2sE>3Q$H$J$j$^$9!#trange $O4X?t$ND j5A0h (3QEY) $r@)8f$7!"rrange, xrange, yrange $O$=$l$>$l%0%i%U$N x,y J}8~$NHO0O$r@)8f$9$k$3$H$K$J$j$^$9!#$3$l$i$NHO0O$Hrrange $O<+F0E*$K@_Dj$5$l$k$+!"$^$?$OL@<(E*$K@_Dj$G$-$^$9!#>\:Y$K4X$7$F$O!"0J2<;2>H: **set rrange (p. 168)**, **set xrange (p. 186)**!#

Nc:

```
set polar
plot t*sin(t)
set trange [-2*pi:2*pi]
set rrange [0:3]
plot t*sin(t)
```

:G=i$N **plot** $O%G%U%)%k%H$N3QEY$NHO0O$N 0 $+$i 2*pi $r;H$$$^$9!#F07BJ}8~$H%0%i%U$N%5%$%:$O<+F0E*$K?-=L$5$l$^$9!#2 HVL\$N **plot** $O3QEY$ND j5A0h$r3HD%$7!"%0%i%U$N%5%$%:$r86E@$+$i 3 $NI}$K@)8B$7$^$9!#$3$l$O x,y $N$=$l$>$l$NJ}8~$r [-3:3] $K@)8B$9$k$3$H$K$J$j$^$9!#

%G%U%)%k%H$G$O6K:BI8%0%i%U$O3QEY 0 (&H=0) $,1&8~$-$G!"A}2C$OH?;~7W2s$j$H$J$k$h$&$K8~$-$E$1$i$l$F$$$^$9!#$=$N 0 $N8~$-$HA}2CJ}8~$NN>J}$rL@<(E*$KJQ992DG=$G$9!#0J2<;2>H: **set theta (p. 178)**!#

**set size square** $H$9$k$H **gnuplot** $O%"%9%Z%/%HHf (=D2#$NHf) $r 1 $K$9$k$N$G1_$, (BJ1_$G$J$/) 1_$K8+$($k$h$&$K$J$j$^$9!#F1?41_$N<~0O$NL\@9$j$N9o$_$O!"**set ttics** $G;XDj$G$-$^$9!#0J2<$b;2>H6K:BI8$N%G%b (polar.dem)

$*$h$S6K:BI8%G!<%?$NIA2h (poldat.dem)!#

## Print %3%^%s%I$N=PNO@h (print)

%3%^%s%I **set print** $O **print** %3%^%s%I$N=PNO$r%U%!%$%k$K%j%@%$%l%/%H$7$^$9!#

=q<0:

```
set print
set print "-"
set print "<filename>" [append]
set print "|<shell_command>"
set print $datablock [append]
```

%Q%i%a!<%?$J$7$N **set print** $O!"=PNO$r <STDERR> $KI|5"$5$;$^$9!#"-" $H$$$&<filename> $O <STDOUT> $r0UL#$7$^$9!#**append** %U%i%0$O%U%!%$%k$rDI2C (append) %b!<%I$G3+$/$3$H$r0UL#$7$^$9!#%Q%$%W$r%5%]!<%H$9$k%W%i%C%H%[!<%`>e$G$O!"<filename> $, "|" $G;O$^$C$F$$$?$i!"<shell_command> $X$N%Q%$%W$,3+$+$l$^$9!#

%3%^%s%I **print** $NBP>]$OL>A0IU$-%G!<%?%V%m%C%/$G$b9=$$$^$;$s!#%G!<%?%V%m%C%/L>$O '$' $G;O$^$j$^$9!#0J2<;2>H: **inline data (p. 39)**!#

## PostScript Dj5A%U%!%$%k%Q%9 (psdir)

%3%^%s%I **set psdir <directory>** $O!"postscript =PNO7A<0$, prologue.ps $dJ8;z% (%s%3!<%IMQ$N%U%!%$%k$rC5$9$N$K;HMQ$9$k8!:w%Q%9$r@)8f$7$^$9!#$3$N;EAH$_$O!"JL$K%m!<%+%k$K%+%9%?%^%$%:$7$? prolog %U%!%$%k72$H@Z$jBX$($k$N$K;H$($^$9!#8!:w$N=gHV$O0J2<$N$h$&$K$J$C$F$$$^$9!#

```
1) ‘set psdir‘ $r;XDj$7$?>l9g$O$=$N%G%#%l%/%H%j
```

2) 4D6-JQ?t `GNUPLOT_PS_DIR` $G;XDj$7$?%G%#%l%/%H%j
3) AH$_9~$^$l$?%X%C%@!<!"$^$?$O%G%U%)%k%H$N%7%9%F%`%G%#%l%/%H%j
4) `‘set loadpath‘` $G;XDj$7$?%G%#%l%/%H%j

## 6K:BI8$NF07B<4 (raxis)

%3%^%s%I **set raxis** $H **unset raxis** $O!"F07B<4$r3J;R@~$H x <4$+$iJ,N%$7$FIA2h$9$k$+$I$&$+$r@Z$jBX$($^$9!#8=:_$N rrange $N:G>.CM$, 0 $G$J$$($=$7$F<+F0=L<\$G$J$$) >l9g!"%0%i%U$H<4$,8 6E@$KC#$7$J$$$3$H$r<($9Gr4]$,6K:BI8%0%i%U$NCf?4$KIA$+$l$^$9!#<4$N@~$O!"%0%i%U$N6-3&$HF1$8@~<o$GIA2h$5$l$^$9!#0J2<;2>H: **polar (p. 166)**, **rrange (p. 168)**, **rtics (p. 168)**, **rlabel (p. 168)**,**set grid (p. 134)**!#

## Rgbmax

=q<0:

```
set rgbmax {1.0 | 255}
unset rgbmax
```

rgbimage %0%i%U$N RGB (@V!"NP!"@D) ?'@.J,$O!"%G%U%)%k%H$G$O [0:255] $NHO0O$N@0?tCM$G$"$k$H$_$J$7$^$9!# **set rgbmax 1.0** $H$9$k$H!"gnuplot $O **rgbimage** $d **rgbalpha** $G$N%0%i%U$N?'@.J,$N@8@.$K;H$&%G!<%?CM$r!"[0:1] $NHO0O$N<B?tCM$G$"$k$H$_$J$7$^$9!#**unset rgbmax** $O!"$=$l$r%G%U%)%k%H$N@0?tCM$NHO0O [0:255] $KLa$7$^$9!#

7Y9p: $3$N%3%^%s%I$O;n83CJ3,$G$9!#>\:Y$OJQ99$9$k2DG=@-$,$"$j$^$9!#FC$K!"gnuplot $N>-Mh$NHG$G$O!"rgbmax $OBg0hE*$J@_Dj$G$O$J$/!"$`$7$m%U%!%$%kKh!"$"$k$$$O plot Kh$KE,@Z$K@_Dj$5$l$k7A$G<BAu$5$l$k$G$7$g$&!#

## Rlabel

$3$N%3%^%s%I$O!"r <4$N>e$K%i%Y%k$rG[CV$7$^$9!#$=$N%i%Y%k$O!"%0%i%U$,6K:BI8%b!<%I (polar) $G$"$k$+H]$+$K4X$o$i$:I=<($5$l$^$9!#DI2C$N;XDj%-!<%o!<%I$K$D$$$F$O0J2<;2>H: **set xlabel (p. 185)**!#

## Rmargin

%3%^%s%I **set rmargin** $O1&$NM>Gr$N%5%$%:$r%;%C%H$7$^$9!#>\:Y$O!"0J2<;2>H: **set margin (p. 146)**!#

## Rrange

%3%^%s%I **set rrange** $O6K:BI8%b!<%I$N%0%i%U$NF07BJ}8~$NHO0O$r@_Dj$7$^$9!#$3$l$O xrange $H yrange $NN>J}$b@_Dj$7$F$7$^$$$^$9!#N><T$O!"[-(rmax-rmin) : +(rmax-rmin)] $K$J$j$^$9!#$7$+$7!"$3$l$N8e$G xrange $d yrange $rJQ99$7$F$b (Nc$($P3HBg$9$k$?$a$K)!"$=$l$O rrange $rJQ99$7$J$$$N$G!"%G!<%?E@$O rrange $K4X$7$F%/%j%C%T%s%0$5$l$?$^$^$H$J$j$^$9!#B>$N<4$H$O0c$$!"r <4$N<+F0=L<\$G$O>o$K rmin = 0 $H$J$j$^$9!# **reverse** $G$O<+F0=L<\%U%i%0$OL5;k$5$l$^$9!#Cm0U: rmin $rI i$NCM$r@_Dj$9$k$H!"M=4|$;$L7k2L$r@8$`2DG=@-$,$"$j$^$9!#

## Rtics

%3%^%s%I **set rtics** $O!"F07B<4$K1h$C$FL\@9$j$rG[CV$7$^$9!#L\@9$j$H$=$N8+=P$7$O8 6E@$N1&B&$KIA$+$l$^$9!#%-!<%o!<%I **mirror** $O!"$=$l$i$r8 6E@$N:8B&$K$bIA$-$^$9!#$=$NB>$N%-!<%o!<%I$K4X$9$kOC$K$D$$$F$O0J2<;2>H: **polar (p. 166)**, **set xtics (p. 187)**, **set mxtics (p. 152)**!#

## %5%s%W%k?t (samples)

4X?t!"$^$?$O%G!<%?$NJd4V$K4X$9$k%G%U%)%k%H$N%5%s%W%j%s%0?t$O!"%3%^%s%I **set samples** $GJQ99$G$-$^$9!#8D!9$N%0%i%U$NIA2hHO0O (sampling range) $NJQ99$O!"0J2<;2>H: **plot sampling (p. 103)**!#

=q<0:

```
set samples <samples_1> {,<samples_2>}
show samples
```

%G%U%)%k%H$G$O%5%s%W%k?t$O 100 E@$H@_Dj$5$l$F$$$^$9!#$3$NCM$rA}$d$9$H$h$j@53N$JIA2h$,=PMh$^$9$,CY$/$J$j$^$9!#$3$N%Q%i%a!<%?$O%G!<%?%U%!%$%k$NIA2h$K$O2?$N1F6A$bM?$($^$;$s$,!"Jd4V/6a;w$N%*%W%7%g%s$,;H$o$l$F$$$k>l9g$O$=$N8B$j$G$O$"$j$^$;$s!#2<!85IA2h$K$D$$$F$O **plot smooth** $r!"3<!85IA2h$K4X$7$F$O!"0J2<;2>H: **set dgrid3d (p. 126)**!#

2<!85$N%0%i%UIA2h$,9T$J$o$l$k$H$-$O <samples_1> $NCM$N$_$,4X78$7$^$9!#

1#@~=hM}$J$7$G6JLLIA2h$,9T$J$o$l$k$H$-$O!"samples $NCM$O8IN)@~Kh$KI>2A$5$l$k%5%s%W%k?t$N;XDj$K$J$j$^$9!#3F v-8IN)@~$O <samples_1> 8D$N%5%s%W%kE@$r; }$A!"u-8IN)@~$O <samples_2> 8D$N%5%s%W%k?t$r; }$A$^$9!#<samples_1> $N$_;XDj$9$k$H!"<samples_2> $NCM$O <samples_1> $HF1$8CM$K@_Dj$5$l$^$9!#0J2<$b;2>H: **set isosamples (p. 136)**!#

## %0%i%UNN0h%5%$%: (size)

=q<0:

```
set size {{no}square | ratio <r> | noratio} {<xscale>,<yscale>}
show size
```

<xscale> $H <yscale> $OIA2hA4BN$N3HBg$NG\N($G!"IA2hA4BN$H$O%0%i%U$H%i%Y%k$HM>Gr$NItJ,$r4^$_$^$9!#

=EMW$JCm0U:

> **gnuplot** $N0JA0$NHG$G$O!"'set size' $NCM$r!"=PNO$9$kIA2hNN0h
> (%-%c%s%P%9) $N%5%$%:$r@)8f$9$k$N$K$b;H$C$F$$$?=PNO7A<0$b$"$j$^
> $7$?$,!"$9$Y$F$N=PNO7A<0$,$=$&$@$C$?$o$1$G$O$"$j$^$;$s$G$7$?!#
> 8=:_$O!"$[$H$s$I$N=PNO7A<0$,0J2<$N%k!<%k$K=>$$$^$9:

**set term <terminal_type> size <XX>, <YY>** $O!"=PNO%U%!%$%k$N%5%$%:!"$^$?$O "%-%c%s%P%9" $N%5%$%:$r@)8f$7$^$9!#%5%$%:%Q%i%a!<%?$NM-8z$JCM$K$D$$$F$O!"8D!9$N=PNO7A<0$N%X%k%W$r;2>H$7$F$/$@$5$$!#%G%U%)%k%H$G$O!"%0%i%U$O$=$N%-%c%s%P%9A4BN$KIA2h$5$l$^$9!#

**set size <XX>, <YY>** $O!"IA2h<+BN$r%-%c%s%P%9$N%5%$%:$KBP$7$FAjBPE*$K?-=L$5$;$^$9!#1 $h$j>.$5$$?-=LCM$r;XDj$9$k$H!"%0%i%U$O%-%c%s%P%9A4BN$rKd$a$:!"1 $h$jBg$-$$?-=LCM$r;XDj$9$k$H!"%0%i%U$N0lItJ,$N$_$,%-%c%s%P%9A4BN$K9g$&$h$&$KIA2h$5$l$^$9!#1 $h$jBg$-$$?-=LCM$r;XDj$9$k$H!"$"$k=PNO7A<0$G$OLdBj$,5/$3$k$+$b$7$l$J$$$3$H$KCm0U$7$F$/$@$5$$!#

**ratio** $O!";XDj$7$?<xscale>, <yscale> $NIA2hHO0OFb$G!"%0%i%U$N%"%9%Z%/%HHf(=D2#Hf) $r <r> $K$7$^$9(<r> $O x J}8~$ND9$5$KBP$9$k y J}8~$ND9$5$NHf)!#

<r> $NCM$rIi$K$9$k$H$=$N0UL#$O0c$C$FMh$^$9!#<r>=-1 $N$H$-!"x <4!"y <4$NAPJ}$NC10L($D$^$j1) $NL\@9$j$ND9$5$,F10l$K$J$k$h$&@_Dj$5$l$^$9!#$3$l$O!"3<!85MQ$N%3%^%s%I **set view equal xy** $N2<!85$G$NF1EyJ*$G$9!#<r>=-2 $N$H$-!"y <4$NC10LL\@9$j$ND9$5$O x <4$NC10LL\@9$j$ND9$5$N2G\$K@_Dj$5$l$^$9!#<r> $,Ii$NCM$K4X$7$F0J2<F1MM$G$9!#

**gnuplot** $,;XDj$5$l$?%"%9%Z%/%HHf$N%0%i%U$r$A$c$s$H=q$1$k$+$O$A*Br$5$l$k=PNO7A<0$K0MB8$7$^$9!#%0%i%U$NNN0h$O=PNO$N;XDj$5$l$?ItJ,$K$A$c$s$H<}$^$j!"%"%9%Z%/%HHf$, <r> $G$"$k$h$&$J:GBg$ND9J}7A$H$J$j$^$9($b$A$m$sE,Ev$JM>Gr$b;D$7$^$9$,)!#

**set size square** $O **set size ratio 1** $HF1$80UL#$G$9!#

**noratio** $H **nosquare** $O$$$:$l$b%0%i%U$r$=$N=PNO7A<0 (terminal) $G$N%G%U%)%k%H$N%"%9%Z%/%HHf$KLa$7$^$9$,!"<xscale> $H <yscale> $O$=$N%G%U%)%k%H$NCM (1.0) $K$OLa$7$^$;$s!#

**ratio** $H **square** $O 3<!85IA2h$G$O0UL#$r;}$A$^$;$s$,!"**set view map** $r;HMQ$7$?3<!85IA2h$N2<!85<M1F$K$O1F6A$rM?$($^$9!#0J2<$b;2>H: **set view equal (p. 183)**!#$3$l$O!"3<!85$N x <4$H y <4$r6/@)E*$KF1$8%9%1!<%k$K$7$^$9!#

Nc:

%0%i%U$,8=:_$N%-%c%s%P%9$rKd$a$k$h$&$JBg$-$5$K@_Dj$7$^$9:

```
set size 1,1
```

%0%i%U$rDL>o$NH>J,$NBg$-$5$G@5J}7A$K$7$^$9:

```
     set size square 0.5,0.5
```

%0%i%U$N9b$5$r2#I}$N 2 G\$K$7$^$9:

```
     set size ratio 2
```

## IA2h%9%?%$%k@_Dj (style)

%G%U%)%k%H$NIA2h%9%?%$%k$O!"**set style data** $H**set style function** $G@_Dj$G$-$^$9!#4X?t$d%G!<%?$N%G%U%)%k%H$NIA2h%9%?%$%k$r8D!9$KJQ99$9$kJ}K!$K$D$$$F$O!"0J2<;2>H: **plot with (p. 106)**!#%9%?%$%k$N0lMwA4BN$O!"0J2<;2>H: **plotting styles (p. 52)**, **plot with (p. 106)**!#

=q<0:

```
     set style function <style>
     set style data <style>
     show style function
     show style data
```

;XDj$G$-$kIA2hMWAG$N%G%U%)%k%H%9%?%$%k$b@_Dj$G$-$^$9!#

=q<0:

```
     set style arrow <n> <arrowstyle>
     set style boxplot <boxplot style options>
     set style circle radius <size> {clip|noclip}
     set style ellipse size <size> units {xy|xx|yy} {clip|noclip}
     set style fill <fillstyle>
     set style histogram <histogram style options>
     set style line <n> <linestyle>
     set style rectangle <object options> <linestyle> <fillstyle>
     set style textbox {opaque|transparent} {{no}border} {fillcolor}
```

### Lp0u%9%?%$%k@_Dj (set style arrow)

3F=PNO7A<0$OLp$dE@$N7A$N%G%U%)%k%H$N=89g$r;}$C$F$$$F!"$=$l$O%3%^%s%I **test** $G;2>H$G$-$^$9!#**set style arrow** $OLp$N7A!"I}!"E@$N7A!"%5%$%:$rDj5A$7!"$=$l$i$r8e$G;H$&$H$-$K$$$A$$$AF1$8>pJs$r7+$jJV$7$F;XDj$7$J$/$F$b%$%s%G%C%/%9$G;2>H$G$-$k$h$&$K$7$^$9!#

=q<0:

```
     set style arrow <index> default
     set style arrow <index> {nohead | head | heads}
                             {size <length>,<angle>{,<backangle>} {fixed}}
                             {filled | empty | nofilled | noborder}
                             {front | back}
                             { {linestyle | ls <line_style>}
                               | {linetype | lt <line_type>}
                                 {linewidth | lw <line_width}
                                 {linecolor | lc <colorspec>}
                                 {dashtype | dt <dashtype>} }
     unset style arrow
     show style arrow
```

<index> $O@0?t$G!"$=$l$GLp$N%9%?%$%k (arrowstyle) $rFCDj$7$^$9!#

**default** $r;XDj$9$k$H!"A4$F$N arrow %9%?%$%k%Q%i%a!<%?$O$=$N%G%U%)%k%H$NCM$K$J$j$^$9!#

<index> $N arrowstyle $,4{$KB8:_$9$k>l9g!"B>$NA4$F$OJ]B8$5$l$?$^$^!"M?$($i$l$?%Q%i%a!<%?$N$_$,JQ99$5$l$^$9!#<index> $,B8:_$7$J$1$l$P!";XDj$5$l$J$+$C$?CM$O%G%U%)%k%H$NCM$K$J$j$^$9!#

**nohead** $r;XDj$9$k$3$H$G!"Lp@h$N$J$$Lp!"$9$J$o$A@~J,$r=q$/$3$H$b$G$-$^$9!#$3$l$OIA2h$N>e$K@~J,$rIA$/JL$JJ}K!$rM?$($^$9!#%G%U%)%k%H$G$O 1 $D$NLp@h$,$D$$$F$$$^$9!#**heads** $N;XDj$G@~J,$NN>C<$KLp@h$,IA$+$l$^$9!#

Lp@h$NBg$-$5$O **size <length>,<angle>** $^$?$O **size <length>,<angle>,<backangle>** $G@)8f$G$-$^$9!# **<length>** $OLp@h$N3F;^$ND9$5$G!"**<angle>** $OLp@h$N;^$HLp<4$,$J$93QEY (C10L$OEY) $G$9!# **<length>** $NC10L$Ox <4$HF1$8$G$9$,!"$=$1$O **<length>** $NA0$K **first**, **second**, **graph**, **screen**, **character** $r$D$1$k$3$H$GJQ99$G$-$^$9!#>\:Y$O!"0J2<;2>H: **coordinates (p. 26)**!#

%G%U%)%k%H$G$O!"$H$F$bC;$$Lp$NLp@h$O>.$5$/$7$^$9$,!"$3$1$O!"**size** %3%^%s%I$N8e$m$K **fixed** $r;H$&$3$H$GL58z$K$G$-$^$9!#

**<backangle>** $O!"Lp@h$N8e$m$NItJ,$NLp<4$H$N@Z$j3Q (**<angle>** $HF1$8J}8~!"C10L$OEY) $K$J$j$^$9$,!"%9%?%$%k$, **nofilled** $N>l9g$O$3$1$rL5;k$7$^$9!#

**filled** $r;XDj$9$k$H!"Lp@h$N2s$j$N@~ (6-3&@~) $rIA$-!"Lp@h$rEI$j$D$V$7$^$9!# **noborder** $r;XDj$9$k$H!"Lp@h$OEI$j$D$V$7$^$9$,!"6-3&@~$OIA$-$^$;$s!#$3$N>l9g!"Lp@h$N@hC<$,%Y%/%H%k$N=*E@%T%C%?%j$N>l=j$KCV$+$1!"$=$NLp@h$OA4BN$H$7$F>/$7>.$5$/$J$j$^$9!#E@@~$GLp$rIA$/>l9g$O!"E@@~$N6-3&@~$O1x$$$N$G!">o$K **noborder** $r;H$&$Y$-$G$9!#Lp@h$NEI$j$D$V$7$O!"$9$Y$F$N=PNO7A<0$,%5%]!<%H$7$F$$$k$H$O8B$j$^$;$s!#

@~<o$O%f!<%6$ND;5A$7$?%i%$%s%9%?%$%k$N%j%9%H$+$iA*$V$3$H$b$G$-$^$9$7 (0J2<;2>H: **set style line (p. 174)**)!"MQ0U$5$1$F$$$k **<line_type>** $NCM (%G%U%)%k%H$N%i%$%s%9%?%$%k$N%j%9%H$NHV9f) $=$7$F **<linewidth>** (%G%U%)%k%H$NI}$NG\?t) $r;H$C$F$3$3$GDj5A$9$k$3$H$b$G$-$^$9!#

$7$+$7!"%f!<%6!<Dj5A:Q$N%i%$%s%9%?%$%k$,A*Br$5$1$?>l9g!"$=$NB0@-(@~<o!"I}) $O!"C1$KB>$N **set style arrow** %3%^%s%I$GE,Ev$JHV9f$d **lt**, **lw** $J$I$r;XDj$7$F$b!"JQ99$O$G$-$J$$$3$H$KCm0U$7$F2<$5$$!#

**front** $r;XDj$9$k$H!"Lp$O%0%i%U$N%G!<%?$N>e$KIA$+$1$^$9!# **back** $,;XDj$5$1$?>l9g (%G%U%)%k%H) $OLp$O%0%i%U$N%G!<%?$N2<$KIA$+$1$^$9!# **front** $r;H$($P!"L)=8$7$?%G!<%?$GLp$,8+$($J$/$J$k$3$H$rKI$0$3$H$,$G$-$^$9!#

Nc:

Lp@h$,$J$/!"G\$NI}$,Lp$rIA$/$K$O:

```
set style arrow 1 nohead lw 2
set arrow arrowstyle 1
```

$=$NB>$NNc$K$D$$$F$O!"0J2<;2>H: **set arrow (p. 113)**!#

### Boxplot %9%?%$%k;XDj (boxplot)

%3%^%s%I **set style boxplot** $K$h$j!"IA2h%9%?%$%k **boxplot** $G@8@.$9$kIA2h$N%1%$%"%&%H$rJQ99$G$-$^$9!#

=q<0:

```
set style boxplot {range <r> | fraction <f>}
                  {{no}outliers} {pointtype <p>}
                  {candlesticks | financebars}
                  {separation <x>}
                  {labels off | auto | x | x2}
                  {sorted | unsorted}
```

boxplot $NH"$O!">o$K%G!<%?E@$NBh01;MJ,0L$+$iBh;0;MJ,0L$NCM$NHO0O$K$+$+$C$F$$$^$9!#H"$+$i1dD9$5$1$kH"$R$2$N8B3&$O!"2 $D$NO [$J$kJ}K!$G@)8f$G$-$^$9!#%G%U%)%k%H$G$O!"H"$R$2$O!"$=$NH"$N$=$1$>$1$NC<$+$i!";MJ,0LHO0O$N1.5 G\($9$J$o$A!"$=$NH"$N87L)$J?bD>J}8~$N9b$5) $KEy$7$$HO0O$K$^$G1dD9$5$1$^$9!#H"$R$2$=$1$>$1$O!"%G!<%?=89g$N$"$kE@$KB0$9$ky $NCM$G=*N;$9$k$h$&$K!"%a%8%"%s$K8~$+$C$F@Z$j<N$F$i$1$^$9!#;MJ,0LHO0O$NCzEY1.5 G\$NCM$NE@$,$J$$>l9g$b$"$j$^$9$+$i!"H"$R$2$O$=$NL>L\>e$NHO0O$h$j$bC;$/$J$k>l9g$b$"$j$^$9!#$3$N%G%U%)%k%H$O0J2<$KBP1~$7$^$9!#

```
set style boxplot range 1.5
```

$b$&0l$D$NJ}K!$H$7$F!"H"$R$2$,$+$+$kE@$NAm?t$N3d9g (fraction) $r;XDj$9$k$3$H$,$G$-$^$9!#$3$N>l9g!"$=$NHO0O$O%a%8%"%sCM$+$i!"%G!<%?=89g$N;XDj$7$?J,$r0O$$9~$`$^$G!"BP>N$K1dD9$5$1$^$9!#$3$N$H$-$b!"8D!9$NH"$R$2$O%G!<%?=89gFb$NE@$NC<$^$G$K@)8B$5$1$^$9!#%G!<%?=89g$N 95% $NE@$r$O$k$K$O0J2<$N$h$&$K$7$^$9!#

```
set style boxplot fraction 0.95
```

H"$R$2$NHO0O$N30$K$"$kG$0U$NE@$O!"outliers $H8+$J$5$1$^$9!#%G%U%)%k%H$G$O$=$1$i$O$R$H$D$R$H$D1_ (pointtype 7) $GIA$+$1$^$9$,!"%*%W%7%g%s **nooutliers** $O$3$1$rL58z$K$7$^$9!#

%G%U%)%k%H$G$O boxplot $O candlesticks $H;w$?%9%?%$%k$GIA2h$7$^$9$,!"financebars $H;w$?%9%?%$%k$GIA2h$9$k$?$a$N%*%W%7%g%s$b$"$j$^$9!#

boxplot $N using ;XDj$,4 NsL\$r;}$D>l9g!"$=$NNs$NCM$O$"$k0x;RJQ?t$NN%;6E*$J%l%Y%k$NCM$G$"$k$H8+$J$7$^$9!#$3$N>l9g!"$=$N0x;RJQ?t$N%l%Y%k$N?t$HF1$8$@$1$NJ#?t$N boxplot $,IA$+$l$^$9!#$=$l$i$N boxplot $NNY$j9g$&$b$NF1;N$N5wN%$O%G%U%)%k%H$G$O 1.0 (x <4$NC10L$G) $G$9$,!"$3$N4V3V$O%*%W%7%g%s **separation** $GJQ99$G$-$^$9!#

%*%W%7%g%s **labels** $O!"$3$l$i$N boxplot ($=$l$>$l%G!<%?=89g$N$"$kItJ,$KBP1~$9$k) $N$I$3$K!"$I$N$h$&$K%i%Y%k$r$D$1$k$+$r7hDj$7$^$9!#%G%U%)%k%H$G$O0x;R$NCM$r?eJ?<4 (x $+x2 $N$$$:$l$+plot $G;H$o$l$F$$$kJ}) $NL\@9%i%Y%k$K=PNO$7$^$9!#$3$l$O%*%W%7%g%s$N **labels auto** $KBP1~$7$^$9!#%*%W%7%g%s **labels x**, **labels x2** $K$h$C$F!"6/@)E*$K x <4!"x2 <4$K$=$l$>$l=PNO$5$;$k$3$H$b$G$-$^$9$7!"**labels off** $G%*%U$K$9$k$3$H$b$G$-$^$9!#

%G%U%)%k%H$G$O!"0x;RJQ?t$N0[$J$k%l%Y%k$KBP1~$9$k boxplot $O@0Ns2=$O$;$:!"%G!<%?%U%!%$%k$K$=$N%l%Y%k$,8=$l$k=gHV$KIA2h$7$^$9!#$3$N5sF0$O%*%W%7%g%s$N **unsorted** $KBP1~$7$^$9$,!"%*%W%7%g%s **sorted** $r;HMQ$9$k$H!"$^$:%l%Y%k$r<-=q=g$K%=!<%H$7!"$=$N=g$K boxplot $rIA2h$7$^$9!#

%*%W%7%g%s **separation**, **labels**, **sorted**, **unsorted** $O!"plot $K4 NsL\$N;XDj$rM?$($?>l9g$N$_8zNO$r;}$A$^$9!#

0J2<;2>H: **boxplot (p. 53)**, **candlesticks (p. 55)**, **financebars (p. 58)**!#

### %G!<%?IA2h%9%?%$%k;XDj (set style data)

%3%^%s%I **set style data** $O%G!<%?IA2h$KBP$9$k%G%U%)%k%H$NIA2h%9%?%$%k$rJQ99$7$^$9!#

=q<0:

```
set style data <plotting-style>
show style data
```

A*Br9`L\$K$D$$$F$O!"0J2<;2>H: **plotting styles (p. 52)**!#**show style data** $O8=:_$N%G%U%)%k%H$N%G!<%?IA2h%9%?%$%k$rI=<($7$^$9!#

### EI$jDY$7%9%?%$%k;XDj (set style fill)

%3%^%s%I **set style fill** $O!"boxes, histograms, candlesticks, filledcurves $G$NIA2h$K$*$1$kIA2hMWAG$N%G%U%)%k%H$N%9%?%$%k$N@_Dj$K;H$o$l$^$9!#$3$N%G%U%)%k%H$O!"8D!9$NIA2h$KEI$jDY$7%9%?%$%k (fillstyle) $r;XDj$9$k$3$H$G>e=q$-$G$-$^$9!#0J2<;2>H: **set style rectangle (p. 175)**!#

=q<0:

```
set style fill {empty
                | {transparent} solid {<density>}
                | {transparent} pattern {<n>}}
               {border {lt} {lc <colorspec>} | noborder}
```

%G%U%)%k%H$NEI$j$D$V$7%9%?%$%k (fillstyle) $O **empty** $G$9!#

%*%W%7%g%s **solid** $O!"=PNO7A<0$,%5%]!<%H$7$F$$$k>l9g!"$=$N?'$G%Y%?EI$j$r9T$$$^$9!#%Q%i%a!<%?<density> $OEI$j$D$V$7?'$N6/$5$rI=$7$F$$$F<density> $,0.0 $J$iH"$O6u!"<density> $,1.0 $J$iH"$O$=$NFbIt$O8=:_$N@~<o$H4 0A4$KF1$8?'$GEI$i$l$^$9!#=PNO7A<0$K$h$C$F$O!"$3$N6/$5$rO"B3E*$KJQ2=$5$;$i$l$k$b$N$b$"$j$^$9$,!"$=$NB>$N$b$N$O!"ItJ,E*$JEI$j$D$V$7$N4v$D$+$N%l%Y%k$r<BAu$7$F$$$k$K2a$.$^$;$s!#%Q%i%a!<%?<density> $,M?$($i$l$J$+$C$?>l9g$O%G%U%)%k%H$N 1 $K$J$j$^$9!#

%*%W%7%g%s **pattern** $O!"=PNO%I%i%$%P$K$h$C$FM?$($i$l$k%Q%?!<%s$G$NEI$j$D$V$7$r9T$$$^$9!#MxMQ$G$-$kEI$j$D$V$7%Q%?!<%s$N<oN`$H?t$O=PNO%I%i%$%P$K0MB8$7$^$9!#EI$j$D$V$7$N boxes %9%?%$%k$GJ#?t$N%G!<%?=89g$rIA2h$9$k>l9g$=$N%Q%?!<%s$O!"J#?t$N6J@~$NIA2h$K$*$1$k@~<o$N<~4|$HF1MM!"M-8z$J%Q%?!<%s$r!"%Q%?!<%s <n> $+$i;O$a$F<~4|E*$KMxMQ$7$^$9!#

%*%W%7%g%s **empty** $O!"H"$rEI$j$D$V$7$^$;$s$,!"$3$l$,%G%U%)%k%H$G$9!#

EI$jDY$7?' (**fillcolor <colorspec>**) $O!"EI$jDY$7%9%?%$%k (fill style) $+$iJ,N%$5$l$F$$$^$9!#$9$J$o$A!"fillstyle $OIA2hMWAG$d%*%V%8%'%/%H$GJL!9$N?'$r;}$C$?$^$^6&M-$9$k$3$H$,$G$-$^$9!#fillstyle $r<u$1$D$1$kBg

Dq$N>l=j$G fillcolor $r;XDj$G$-$^$9!#fillcolor $O **fc** $N>JN,7A$b;H$($^$9!#;XDj$7$J$$>l9g$O!"EI$jDY$7?'$O8=:_$N@~<o (linetype) $+$i<h$j$^$9!#Nc:

```
plot FOO with boxes fillstyle solid 1.0 fillcolor "cyan"
```

**Set style fill border** %-!<%o!<%I **border** $O!"EI$jDY$7%*%V%8%'%/%H$r8=:_$N@~<o$H?'$N<B@~$G0O$`$h$&$K$7$^$9!#$=$N@~$N?'$O!"linetype $d linecolor $rDI2C;XDj$9$l$PJQ99$G$-$^$9!#**noborder** $O!"6-3&$N@~$rIA$+$J$$$h$&$K$7$^$9!#Nc:

```
# EI$jDY$7$O6/EYH>J,!"6-3&$OF1$8?'$GA46/EY
set style fill solid 0.5 border
# EI$jDY$7$OH>J,F)2a!"6-3&$O<B@~$N9u (@~<o -1)
set style fill transparent solid 0.5 border -1
# 8=:_$N?'$G$N%Q%?!<%sEI$jDY$7!"6-3&$O@~<o 5 $N?'$G
plot ... with boxes fillstyle pattern 2 border lt 5
# ?e?' (cyan) $G$NNN0h$NEI$jDY$7!"6-3&$O@D
plot ... with boxes fillcolor "cyan" fs solid border linecolor "blue"
```

Cm0U: fill %9%?%$%k$N border (6-3&) B0@-$O!"%G%U%)%k%H%b!<%I$N closed (JD6J@~) $N **with filledcurves** $N%0%i%U$K$7$+1F6A$rM?$($^$;$s!#

F)L@2= **(set style fill transparent)** $$$/$D$+$N=PNO7A<0$O!"EI$j$D$V$7NNN0h$N **transparent** (F)L@2=) B0@-$r%5%]!<%H$7$F$$$^$9!#transparent solid $NNN0hEI$j$D$V$7$G$O!"**density** (L)EY) %Q%i%a!<%?$O%"%k%U%!CM$H$7$F;HMQ$5$l$^$9!#$D$^$j!"L)EY 0 $O40A4$JF)L@$r!"L)EY 1 $O40A4$JITF)L@$r0UL#$7$^$9!#transparent pattern $NEI$j$D$V$7$G$O!"%Q%?!<%s$NGX7J$,40A4$JF)L@$+40A4$JITF)L@$N$$:$l$+$G$9!#

F)L@$JEI$j$D$V$7NNN0h$r4^$`%0%i%U$r8+$?$j:n$C$?$j$9$k$N$K$O!"JL$J@)8B$,$"$j$&$k$3$H$KCm0U$7$F$/$@$5$$!#Nc$($P!"png =PNO7A<0$G$O!""truecolor" %*%W%7%g%s$,;XDj$5$l$F$$$k>l9g$K$N$_F)L@2=$NEI$jDY$7$,MxMQ$G$-$^$9!#PDF %U%!%$%k$K$OF)L@2=NN0h$,@5$7$/5-=R$5$l$F$$$F$b!"PDF $NI=<($=%U%H$K$h$C$F$O$=$l$r@5$7$/I=<($G$-$J$$$3$H$b$"$j$($^$9!#<B:]$K PostScript %W%j%s%?$G$OLdBj$O$J$$$N$K!"Ghostscript/gv $G$O%Q%?!<%sEI$j$D$V$7NNN0h$r@5$7$/I=<($G$-$^$;$s!#

## 4X?tIA2h%9%?%$%k;XDj (set style function)

%3%^%s%I **set style function** $O4X?tIA2h$KBP$9$k%G%U%)%k%H$NIA2h%9%?%$%k (lines, points, filledcurves $J$I) $rJQ99$7$^$9!#0J2<;2>H: **plotting styles (p. 52)**!#

=q<0:

```
set style function <plotting-style>
show style function
```

## Set style increment

Cm0U: $3$N%3%^%s%I$OHs?d>)$G$9!#Be$o$j$K?7$7$$%3%^%s%I **set linetype** $r;HMQ$7$F$/$@$5$$!#$3$l$O!"BeMQ$N$?$a$N0l;~E*$JE,Ev$J@~<o$r8!:w$9$k$N$G$O$J$/!"@~<o<+BN$r:FDj5A$7$^$9!#0J2<;2>H: **set linetype (p. 143)**!#

=q<0:

```
set style increment {default|userstyles}
show style increment
```

%G%U%)%k%H$G$O!"F1$8%0%i%U>e$NK!$NIA2h$O!"8=:_$N=PNO7A<0$G%G%U%)%k%H$GDj5A$5$l$F$$$k@~<o$NK!$N$b$N$G9T$o$l$^$9!#$7$+$7!"**set style increment user** $rA*Br$9$k$H!"%G%U%)%k%H$N@~<o$G$O$J$/!"%f!<%6Dj5A%i%$%s%9%?%$%kHV9f$N$b$N$r;HMQ$5$;$k$3$H$,$G$-$^$9!#

Nc:

```
set style line 1 lw 2 lc rgb "gold"
set style line 2 lw 2 lc rgb "purple"
set style line 4 lw 1 lc rgb "sea-green"
set style increment user
```

```
plot f1(x), f2(x), f3(x), f4(x)
```

$3$l$O!"4X?t f1, f2, f4 $O?7$?$K%f!<%6Dj5A$5$l$?%i%$%s%9%?%$%k$GIA2h$5$l$^$9!#%f!<%6Dj5A%i%$%s%9%?%$%k$,8+$D$+$i$J$$>l9g$O!"Be$o$j$K$=$l$KBP1~$9$k%G%U%)%k%H$N@~<o$,MxMQ$5$l$^$9!#Nc$($P!">e$NNc$G$O!" f3(x) $O%G%U%)%k%H$N@~<o 3 $GIA2h$5$l$^$9!#

### @~%9%?%$%k;XDj (set style line)

=PNOAuCV$K$O$*$N$*$N%G%U%)%k%H$N@~<o$HE@<o$N=89g$,$"$j!"$=$l$i$O%3%^%s%I **test** $G8+$k$3$H$,$G$-$^$9!# **set style line** $O@~<o$H@~I}!"E@<o$HE@$NBg$-$5$r!"8D!9$N8F$S=P$7$G!"$=$l$i$N>pJs$rA4It;XDj$9$kBe$o$j$K!"C1$J$kHV9f$G;2>H$G$-$k$h$&$K$"$i$+$8$aDj5A$9$k$b$N$G$9!#

=q<0:

```
set style line <index> default
set style line <index> {{linetype  | lt} <line_type> | <colorspec>}
                       {{linecolor | lc} <colorspec>}
                       {{linewidth | lw} <line_width>}
                       {{pointtype | pt} <point_type>}
                       {{pointsize | ps} <point_size>}
                       {{pointinterval | pi} <interval>}
                       {{pointnumber | pn} <max_symbols>}
                       {{dashtype | dt} <dashtype>}
                       {palette}
unset style line
show style line
```

**default** $O!"A4$F$N%i%$%s%9%?%$%k%Q%i%a!<%?$r$=$l$HF1$8 index $r;}$D@~<o (linetype) $K@_Dj$7$^$9!#

<index> $N linestyle $,4{$KB8:_$9$k>l9g!"B>$NA4$F$OJ]B8$5$l$?$^$^!"M?$($i$l$?%Q%i%a!<%?$N$_$,JQ99$5$l$^$9!#<index> $,B8:_$7$J$1$l$P!";XDj$5$l$J$+$C$?CM$O%G%U%)%k%H$NCM$K$J$j$^$9!#

$3$N$h$&$K$D$/$i$l$k%i%$%s%9%?%$%k$O!"%G%U%)%k%H$N7?(@~<o, E@<o) $rJL$J$b$N$KCV$-49$($k$3$H$O$7$J$$$N$G!"%i%$%s%9%?%$%k!"%G%U%)%k%H$N7?!"$I$A$i$b;H$($^$9!#%i%$%s%9%?%$%k$O0l;~E*$J$b$N$G!"%3%^%s%I **reset** $r<B9T$9$l$P$$$D$G$b$=$l$i$O>C$(5n$j$^$9!#@~<o<+BN$r:FDj5A$7$?$$>l9g$O!"0J2<;2>H: **set linetype (p. 143)**!#

@~<o$HE@<o$O!"$=$N index CM$r%G%U%)%k%H$H$7$^$9!#$=$N index CM$KBP$9$k<B:]$N5-9f$N7A$O!"=PNO7A<0$K$h$C$FO[$J$jF@$^$9!#

@~I}$HE@$NBg$-$5$O!"8=:_$N=PNO7A<0$N%G%U%)%k%H$NI}!"Bg$-$5$KBP$9$k>h?t$G$9 ($7$+$7!"$3$3$G$N <point_size> $O!"%3%^%s%I **set pointsize** $GM?$($i$l$k>h?t$K$O1F6A$r<u$1$J$$$3$H$KCm0U$7$F$/$@$5$$)!#

**pointinterval** $O!"%9%?%$%k **linespoints** $G%0%i%UCf$KIA$+$l$kE@$N4V3V$r@)8f$7$^$9!#%G%U%)%k%H$O 0 $G$9 ($9$Y$F$NE@$,IA2h$5$l$k)!#Nc$($P!" **set style line N pi 3** $O!"E@<o$, N!"E@$NBg$-$5$H@~I}$O8=:_$N=PNO7A<0$N%G%U%)%k%H$G!" **with linespoints** $G$NIA2h$G$OE@$O 3 HVL\Kh$KIA2h$5$l$k$h$&$J%i%$%s%9%?%$%k$rDj5A$7$^$9!#$=$N4V3V$rI i$NCM$K$9$k$H!"$=$l$O4V3V$O@5$NCM$N>l9g$HF1$8$G$9$,!"E@$N5-9f$N2<$K$J$k@~$r=q$+$J$$$h$&$K$7$^$9 (=PNO7A<0$K$h$C$F$O)!#

**pointnumber** B0@-$O!" **pointinterval** $H;w$F$$$^$9$,!"N 8D$*$-$KIA$/$h$&$K$9$kBe$o$j$K!"A4BN$NE@$N8D?t$r N 8D$K8BDj$9$k$H$3$m$,0c$$$^$9!#

A4$F$N=PNOAuCV$, **linewidth** $d **pointsize** $r%5%]!<%H$7$F$$$k$o$1$G$O$"$j$^$;$s!#$b$7%5%]!<%H$5$l$F$$$J$$>l9g$O$=$l$i$N%*%W%7%g%s$OL5;k$5$l$^$9!#

=PNO7A<0$K0MB8$7$J$$$?'$r **linecolor <colorspec>** $+ **linetype <colorspec>** (>JN,7A$O **lc**, **lt**) $N$$$:$l$+$r;H$C$F3d$jEv$F$k$3$H$,$G$-$^$9!#$3$N>l9g!"?'$O RGB $N 3 $DAH$GM?$($k$+!"gnuplot $N;}$D%Q%l%C%H$N?'L>!"8=:_$N%Q%l%C%H$KBP$9$k>.?t;XDj!"$^$?$O cbrange $X$N8=:_$N%Q%l%C%H$NBP1~$KBP$9$kDj?tCM!"$N$$$:$l$+$GM?$($^$9!#0J2<;2>H: **colors (p. 40)**, **colorspec (p. 41)**,**set palette (p. 161)**, **colornames (p. 122)**, **cbrange (p. 195)**!#

**set style line <n> linetype <lt>** $O!"=PNO7A<0$K0MB8$7$?E@@~/GK@~$N%Q%?!<%s$H?'$NN>J}$r%;%C%H$7$^$9!# **set style line <n> linecolor <colorspec>** $d **set style line <n> linetype <colorspec>** $O!"8=:_$NE@@~/GK@~$N%Q%?!<%s$rJQ99$;$:$K?7$7$$@~?'$r@_Dj$7$^$9!#

3 <!85%b!<%I(**splot** %3%^%s%I) $G$O! ""linetype palette z" $N>JN,7A$H$7$FFCJL$K%-!<%o!<%I **palette** $r;H$& $3$H$b5v$5$l$F$$$^$9! #$=$N?'$NCM$O! "splot $Nz :BI8(9b$5) $KBP1~$7! "6J@~! "$"$k$$$O6JLL$Kl h$C$F3 j$i$+ $KJQ2=$7$^$9! #

Nc: 0J2<$G$O! "HV9f 1, 2, 3 $KBP$9$k%G%U%)%k%H$N@~<o$r$=$l$>$l@V! "NP! "@D$H$7! "%G%U%)%k%H$NE@$N7A$r$=$l $>$l@5J}7A! "==;z! "; 03Q7A$G$"$k$H$7$^$9! #$3$N$H$-0J2<$N%3%^%s%I

```
set style line 1 lt 2 lw 2 pt 3 ps 0.5
```

$O! "?7$7$$%i%$%s%9%?%$%k$H$7$F! "NP$G%G%U%)%k%H$N2 G\$NI}$N@~! "$*$h$S; 03Q7A$GH>J,$NI}$NE@$rDj5A$7$^ $9! #$^$?! "0J2<$N%3%^%s%I

```
set style function lines
plot f(x) lt 3, g(x) ls 1
```

$O! "f(x) $O%G%U%)%k%H$N@D@~$G! "g(x) $O%f!<%6$NDj5A$7$?NP$N@~$GIA2h$7$^$9! #F1MM$K! "%3%^%s%I

```
set style function linespoints
plot p(x) lt 1 pt 3, q(x) ls 1
```

$O! "p(x) $r@V$$@~$G7k$P$l$?%G%U%)%k%H$N; 03Q7A$G! "q(x) $ONP$N@~$G7k$P$l$?>.$5$$; 03Q7A$GIA2h$7$^$9! #

```
splot sin(sqrt(x*x+y*y))/sqrt(x*x+y*y) w l pal
```

$O! "**palette** $K=>$C$F3j$i$+$J?'$r;H$C$F6JLL$rIA2h$7$^$9! #$3$l$O$=$l$r%5%]!<%H$7$?=PNO7A<0$G$7$+$A$c $s$H$OF0:n$7$J$$$3$H$KCm0U$7$F$/$@$5$$! #0J2<$b;2>H: **set palette (p. 161)**, **set pm3d (p. 157)**! #

```
set style line 10 linetype 1 linecolor rgb "cyan"
```

$O! "RGB %+%i!<$r%5%]!<%H$9$k$9$Y$F$N=PNO7A<0$G! "%i%$%s%9%?%$%k 10 $K<B@~$N?e?'$r3d$jEv$F$^$9! #

### 1_%9%?%$%k;XDj (set style circle)

=q<0:

```
set style circle {radius {graph|screen} <R>}
                 {{no}wedge}
                 {clip|noclip}
```

$3$N%3%^%s%I$O! "IA2h%9%?%$%k "with circles" $G;H$o$l$k%G%U%)%k%H$NH>7B$r@_Dj$7$^$9! #$3$l$O! "%G!<%?IA 2h$G 2 Ns$N%G!<%? (x,y) $7$+M?$($J$+$C$?>l9g! "$"$k$$$O4X?tIA2h$N$H$-$KE,MQ$5$l$^$9! #%G%U%)%k%H$O! "0J 2<$N$h$&$K$J$C$F$$$^$9: "set style circle radius graph 0.02"! #**nowedge** $O! "@p7A$N1_8LItJ,$+$iCf?4$K8~$+ $&2 K\$NH>7B$rIA$+$J$$$h$&$K$7$^$9$,! "%G%U%)%k%H$O **wedge** $G$9! #$3$N%Q%i%a!<%?$O40A4$J1_$KBP$7$F$O 2?$b$7$^$;$s! #**clip** $O1_$rIA2h6-3&$G%/%j%C%T%s%0$7$^$9$,! "**noclip** $O$3$l$rL58z$K$7$^$9! #%G%U%)%k%H$O **clip** $G$9! #

### D9J}7A%9%?%$%k;XDj (set style rectangle)

%3%^%s%I **set object** $GDj5A$5$l$?D9J}7A$K$OJL!9$N%9%?%$%k$r@_Dj$G$-$^$9! #$7$+$7! "8DJL$N%9%?%$%k;XDj $r$7$J$1$l$P! "$=$N%*%V%8%'%/%H$O%3%^%s%I **set style rectangle** $K$h$k%G%U%)%k%H$r<u$17Q$.$^$9! #

=q<0:

```
set style rectangle {front|back} {lw|linewidth <lw>}
                    {fillcolor <colorspec>} {fs <fillstyle>}
```

0J2<;2>H: **colorspec (p. 41)**, **fillstyle (p. 172)**! #**fillcolor** $O **fc** $H>JN,$G$-$^$9! #

Nc:

```
set style rectangle back fc rgb "white" fs solid 1.0 border lt -1
set style rectangle fc linsestyle 3 fs pattern 2 noborder
```

%G%U%)%k%H$N@_Dj$O! "GX7J?'$G$NEI$jDY$7$G! "6-3&$O9u$K$J$C$F$$$^$9! #

### BJ1_%9%?%$%k;XDj (set style ellipse)

=q<0:

```
     set style ellipse {units xx|xy|yy}
                       {size {graph|screen} <a>, {{graph|screen} <b>}}
                       {angle <angle>}
                       {clip|noclip}
```

$3$N%3%^%s%I$O!"BJ1_$ND>7B$rF1$8C10L$G7W;;$9$k$+$I$&$+$r@)8f$7$^$9!#%G%U%)%k%H$O **xy** $G!"$3$l$OBJ1_$N<g<4 (Bh 1 <4) $ND>7B$O x ($^$?$O x2) <4$HF1$8C10L$G7W;;$7!"I{<4 (Bh 2 <4) $ND>7B$O y ($^$?$O y2) <4$NC10L$G7W;;$7$^$9!#$3$N%b!<%I$G$O!"BJ1_$NN><4$NHf$O!"IA2h<4$N%"%9%Z%/%HHf$K0MB8$7$^$9!#**xx** $+ **yy** $K@_Dj$9$l$P!"$9$Y$F$NBJ1_$NN><4$OF1$8C10L$G7W;;$5$l$^$9!#$3$l$O!"IA2h$5$l$kBJ1_$NN><4$NHf$O!"2sE>$7$F$b@5$7$$$^$^$G$9$,!"?eJ?J}8~$+?bD>J}8~$N0lJ}$N=L<\$NJQ99$K$h$j@5$7$/$J$/$J$k$3$H$r0UL#$7$^$9!#

$3$l$O!"object $H$7$FDj5A$5$l$?BJ1_!"%3%^%s%I **plot** $K$h$C$FIA2h$5$l$kBJ1_$NN>J}$K1F6A$rM?$($kA4BNE*$J@_Dj$G$9$,!"**units** $NCM$O!"IA2hKh!"%*%V%8%'%/%HKh$K@_Dj$r:FDj5A$G$-$^$9!#

BJ1_$N%G%U%)%k%H$N%5%$%:$b!"%-!<%o!<%I **size** $G@_Dj$G$-$^$9!#%G%U%)%k%H$N%5%$%:$O!"2 Ns$N$_$N%G!<%?!"$^$?$O4X?t$N plot L?Na$GE,MQ$5$l$^$9!#2 $D$NCM$O!"BJ1_$N (2 $D$N<g<4!"2 $D$NI{<4$K8~$+$$9g$&) <g<4D>7B$HI{<4D>7B$H$7$F;HMQ$5$l$^$9!#

%G%U%)%k%H$O!""set style ellipse size graph 0.05,0.03" $G$9!#

:G8e$K$J$j$^$9$,!"%G%U%)%k%H$N8~$-$r%-!<%o!<%I **angle** $G@_Dj$b$G$-$^$9!#8~$-$O!"BJ1_$N<g<4$H%0%i%U$N x <4$NJ}8~$H$J$93Q$G!"C10L$OEY$GM?$($kI,MW$,$"$j$^$9!#

**clip** $OBJ1_$rIA2h6-3&$G%/%j%C%T%s%0$7$^$9$,!"**noclip** $O$3$l$rL58z$K$7$^$9!#%G%U%)%k%H$O **clip** $G$9!#

BJ1_$N object $NDj5A$K4X$7$F$O0J2<$b;2>H: **set object ellipse (p. 154)**!#2 <!85$NIA2h%9%?%$%k$K4X$7$F$O0J2<;2>H: **ellipses (p. 56)**!#

### J8;zNs%\%C%/%9%9%?%$%k;XDj (set style textbox)

=q<0: set style textbox {opaque|transparent}

```
                       {{no}border {<bordercolor>}}{linewidth <lw>}
                       {fillcolor <color>}
                       {margins <xmargin>,<ymargin>}
```

$3$N%3%^%s%I$O!"B0@- **boxed** $K$h$k label $NI=<($r@)8f$7$^$9!#H"IU$-J8;zNs$r%5%]!<%H$7$J$$=PNO7A<0$O$3$N%9%?%$%k$rL5;k$7$^$9!#Cm0U: 8=:_$N<BAu$O;n83E*$G!";EMM$OJQ99$5$l$k$+$b$7$l$^$;$s!#$$$/$D$+$N=PNO7A<0 (svg, latex) $G$N<BAu$OIT40A4$G$9!#$^$?!"$[$H$s$I$N=PNO7A<0$O!"2sE>$7$?J8;zNs$NH"IU$1$,@5$7$/$G$-$^$;$s!#

## 6JLLIA2h (surface)

%3%^%s%I **set surface** $O 3 <!85IA2h (**splot**) $K$N$_4X78$7$^$9!#

=q<0:

```
     set surface {implicit|explicit}
     unset surface
     show surface
```

**unset surface** $K$h$j **splot** $O!"4X?t$d%G!<%?%U%!%$%k$NE@$KBP$9$k$I$s$JE@$d@~$bIA$+$J$/$J$j$^$9!#$3$l$O<g$K!"Ey9b@~$r:n$k6JLL$rIA$/Be$o$j$KEy9b@~$N$_$rIA$/>l9g$KM-MQ$G$9!#$=$N>l9g$G$b **set contour** $N@_Dj$K$h$j$^$9$,!"6JLL>e$KEy9b@~$,IA$+$l$^$9!#B>$N$b$N$ODL>o$N$^$^$G!"$"$k0l$D$N4X?t$d%G!<%?%U%!%$%k$N6JLL$N$_$r%*%U$K$9$k$K$O!"**splot** %3%^%s%I>e$G%-!<%o!<%I **nosurface** $r;XDj$7$F$/$@$5$$!#Ey9b@~$r3J;R$NEZBf$KI=<($7$?$$>l9g$O **unset surface; set contour base** $H$$$&AH$,JXMx$G$7$g$&!#0J2<$b;2>H: **set contour (p. 122)**!#

3 <!85%G!<%?$NAH$,LVL\(3J;R@~) $HG'<1$5$l$k$H!"gnuplot $O%G%U%)%k%H$G$O3J;R6JLL$rMW5a$7$F$$$k$b$N$H$7$F!"0EL[$K **with lines** $NIA2h%9%?%$%k$rMQ$$$^$9!#0J2<;2>H: **grid_data (p. 199)**!#%3%^%s%I **set surface explicit** $O$3$N5!G=$rM^@)$7!"F~NO%U%!%$%k$N%G!<%?$NJ,N%$5$l$?%V%m%C%/$G5-=R$5$l$k8IN)@~$N$_$rIA2h$7$^$9!#$3$N>l9g$G$b!"splot $GL@<(E*$K **with surface** $H$9$l$P3J;R6JLL$,IA2h$5$l$^$9!#

### %F!<%V%k%G!<%?=PNO (table)

**table** %b!<%I$,M-8z$J>19g!"**plot** $H **splot** %3%^%s%I$O!"8=:_$N=PNO7A<0$KBP$9$k<B:]$NIA2h$r@8@.$9$kBe$o$j$K

```
    X Y {Z} <flag>
```

$NCM$NJ#?tNs$+$i$J$kI=7A<0$N%F%-%9%H=PNO$r9T$J$$$^$9!#%U%i%0J8;z <frag> $O!"$=$NE@$,M-8z$JHO0OFb$K$"$k>l9g$O "i"!"HO0O30$N>l9g$O "o"!"L$Dj5ACM(undefined) $N>l9g$O "u" $G$9!#%G!<%?$N=q<0$O!"<4$N9o$_$N=q<0 (0J2<;2>H: **set format (p. 131)**) $K$h$C$F7h$^$j$^$9!#Ns$O!"%G%U%)%k%H$G$O6uGr6h@Z$j$G$9!#I=%G!<%?$r CSV 7A<0$G=q$-=P$9J}K!$N>\:Y$O!"0J2<;2>H: **with table (p. 177)**!#$3$l$O!"Ey9b@~$r@8@.$7!"$=$l$r:FMxMQ$N$?$a$KJ]B8$7$?$$$H$-$KJXMx$G$9!#$3$NJ}K!$O!"Jd4V$5$l$?%G!<%?$rJ]B8$9$k$N$K$b;H$&$3$H$,$G$-$^$9 (0J2<;2>H: **set samples (p. 168)**, **set dgrid3d (p. 126)**)!#

=q<0:

```
     set table {"outfile" | $datablock} {append}
               {separator {space|tab|comma|"<char>"}}
     plot <whatever>
     unset table
```

$3$N8e$NI=7A<0$N=PNO$O!"%U%!%$%k "outfile" $r;XDj$7$F$$$l$P$=$l$K=q$-=P$7$^$9$,!"$=$&$G$J$1$l$PI8=`=PNO$+!"8=:_$N **set output** $,;XDj$9$k$b$N$K=PNO$7$^$9!#**outfile** $,4{$KB8:_$9$k>l9g$O!"**append** %-!<%o!<%I$r;XDj$9$l$PDI2C=PNO!";XDj$7$J$1$l$P3$N=PNO$,>e=q$-$7$^$9!#B>$K!"I=7A<0=PNO$rL>A0IU$-%G!<%?V%m%C%/$K%j%@%$%l%/%H$9$k$3$H$b$G$-$^$9!#%G!<%?V%m%C%/L>$O '$' $G;O$^$j$^$9!#0J2<$b;2>H: **inline data (p. 39)**!#8=:_$N=PNO7A<0$NI8=`E*$JIA2h$KLa$9$K$O!"**unset table** $rL@<(E*$K9T$J$&I,MW$,$"$j$^$9!#

**separator** J8;z$O!"CSV %U%!%$%k (%3%s%^6h@Z$j) $N=PNO$K;H$($^$9!#$=$N%b!<%I$O!"IA2h%9%?%$%k **with table** $K$N$_1F6A$rM?$($^$9!#0J2<;2>H:**plot with table (p. 177)**!#

#### Plot with table

0J2<$N@bL@$O!"FCJL$JIA2h%9%?%$%k **with table** $K$N$_E,MQ$5$l$^$9!#

I=%G!<%?$KJQ49$5$l$kF~NO%G!<%?$KBP$9$kIA2h%9%?%$%k$K0MB8$9$k=hM} (J?3j2=!"8m:9@~$N1dD9!"2<4HO0O$N%A%'%C%/Ey) $rHr$1$k$?$a!"$"$k$$$OI=%G!<%?$KJQ49$G$-$kNs$N?t$rA}$d$9$K$O!"DL>o$NIA2h%9%?%$%k$NBe$o$j$K "table" %-!<%o!<%I$r;H$C$F$/$@$5$$!#$3$N>l9g!"HO0OFb/HO0O30/L$Dj5A$r0UL#$9$k **i, o, u** $,CV$+$l$k:G8e$NDI2CNs$O!"=PNO$K$O$D$-$^$;$s!#$=$N=PNO@h$O!":G=i$K **set table <where>** $G;XDj$9$kI,MW$,$"$j$^$9!#Nc:

```
    set table $DATABLOCK1
    plot <file> using 1:2:3:4:($5+$6):(func($7)):8:9:10 with table
```

$3$N>l9g!"<B:]$NIA2h%9%?%$%k$,$J$$$>uBV$J$N$G!"3FNs$K$OFCDj$N<4$OBP1~$7$J$$$3$H$K$J$j!"$h$C$F xrange, yrange Ey$N@_Dj$OL5;k$5$l$^$9!#

J8;zNs$KBP$7$F **using** $GI>2A$7$?>l9g$O!"J8;zNs$bI=%G!<%?2=$5$l$^$9!#?tCM%G!<%?$O>o$K %g $N=q<0$G=q$-=P$5$l$^$9$,!"B>$N=q<0$r;H$$$?$$>l9g$O!"$=$N$h$&$K=q<02=$5$l$?J8;zNs$r@8@.$9$k$h$&$K sprintf $+ gprintf $r;HMQ$7$F$/$@$5$$!#

```
    plot <file> using ("File 1"):1:2:3 with table
    plot <file> using (sprintf("%4.2f",$1)) : (sprintf("%4.2f",$3)) with table
```

CSV %U%!%$%k$r@8@.$9$k$K$O!"0J2<$N$h$&$K$7$^$9!#

```
    set table "tab.csv" separator comma
    plot <foo> using 1:2:3:4 with table
```

### =PNO7A<0 (terminal)

**gnuplot** $O?tB?$/$N%0%i%U%#%C%/7A<0$r%5%]!<%H$7$F$$$^$9!#%3%^%s%I **set terminal** $r;H$C$F **gnuplot** $N=PNO$NBP>]$H$J$k7A<0$N<oN`$rA*$s$G$/$@$5$$!#=PNO@h$r%U%!%$%k!"$^$?$O=PNOAuCV$K%j%@%$%l%/%H$9$k$K$O **set output** $r;H$C$F$/$@$5$$!#

=q<0:

```
set terminal {<terminal-type> | push | pop}
show terminal
```

<terminal-type> $,>JN,$5$l$k$H **gnuplot** $OMxMQ2DG=$J=PNO7A<0$N0lMw$rI=<($7$^$9!#<terminal-type> $N;XDj$K$OC;=L7A$,;H$($^$9!#

**set terminal** $H **set output** $NN>J}$r;H$&>l9g!"**set terminal** $r:G=i$K$9$kJ}$,0BA4$G$9!#$=$l$O!"OS $K$h$C$F$O!"$=$l$,I,MW$H$9$k%U%i%0$r%;%C%H$9$k=PNO7A<0$,$"$k$+$i$G$9!#

$$$/$D$+$N=PNO7A<0$O$?$/$5$s$ND12C%*%W%7%g%s$r;}$A$^$9!#3F <**term**> $KBP$7!"D>A0$N **set term <term> <options>** $G;HMQ$5$l$?%*%W%7%g%s$O5-21$5$l!"$=$N8e$N **set term <term>** $,$=$l$r%j%;%C%H$9$k$3$H$O$"$j$^$;$s!#$3$l$ONc$($P0u:~;~$KM-MQ$G$9!#4v$D$+$N0[$J$k=PNO7A<0$r@ZBX$($k>l9g!"A0$N%*%W%7%g%s$r7+$jJV$7>'$($kI,MW$O$"$j$^$;$s!#

%3%^%s%I **set term push** $O!"8=:_$N=PNO7A<0$H$=$N@_Dj$r **set term pop** $K$h$C$FI|5"$9$k$^$G5-21$7$F$$$^$9!#$3$l$O **save term**, **load term** $H$[$\F1Ey$G$9$,!"%U%!%$%k%7%9%F%`$X$N%"%/%;%9$O9T$o$:!"$h$C$FNc$($P$3$l$O!"0u:~8e$K%W%i%C%H%[!<%`$KOMB8$7$J$$7A$G=PNO7A<0$rI|5"$9$kL\E*$K;H$($^$9!#gnuplot $N5/F08e!"%G%U%)%k%H!"$^$?$O **startup** %U%!%$%k$K=q$+$l$?=PNO7A<0$,<+F0E*$K5-21 (push) $5$l$^$9!#$h$C$F!"L@<(E*$K=PNO7A<0$r5-21$5$;$k$3$H$J$/!"G$0U$N%W%i%C%H%[!<%`>e$G%G%U%)%k%H$N=PNO7A<0$r **set term pop** $K$h$C$FI|5"$5$;$k!"$H$$$&F0:n$r4|BT$7$?%9%/%j%W%H$r2DHB@-$r<:$o$:$K=q$/$3$H$,=PMh$^$9!#

>\:Y$O!"0J2<;2>H: **complete list of terminals (p. 204)**!#

## =PNO7A<0$X$N%*%W%7%g%s (termoption)

%3%^%s%I **set termoption** $O!"8=:_;HMQ$7$F$$$k=PNO7A<0$N?6Iq$$$r!"?7$?$J **set terminal** %3%^%s%I$NH/9T$J$7$KJQ99$9$9$k$3$H$r2DG=$K$7$^$9!#$3$N%3%^%s%I0l$D$KBP$7$F0l$D$N%*%W%7%g%s$N$_$,JQ99$G$-$^$9!#$=$7$F$3$NJ}K!$GJQ99$G$-$k%*%W%7%g%s$O$=$&B?$/$O$"$j$^$;$s!#8=:_;HMQ2DG=$J%*%W%7%g%s$O0J2<$N$b$N$N$_$G$9!#

```
set termoption {no}enhanced
set termoption font "<fontname>{,<fontsize>}"
set termoption fontscale <scale>
set termoption {linewidth <lw>}{lw <lw>}
```

## 6K:BI8J}0L@)8f (theta)

6K:BI8%0%i%U$O!"%G%U%)%k%H$G$O3Q$N 0 $NJ}8~ (&H = 0) $,%0%i%U$N1&B&$r;X$9$h$&8~$-$E$1$i$l!"3Q$NA}2C$OH?;~7W2s$j$K9T$o$l!"&H = 90 $,??>e$r8~$/$h$&$K$J$C$F$$$^$9!#**set theta** $K$h$j!"6K:BI8$N3Q$N:BI8$K4X$9$k 0 $N8~$-$HA}2CJ}8~$rJQ99$G$-$^$9!#

```
set theta {right|top|left|bottom}
set theta {clockwise|cw|counterclockwise|ccw}
```

**unset theta** $O!"%G%U%)%k%H$N>uBV "set theta right ccw" $KI|5"$7$^$9!#

## A4<4L\@9$j@)8f (tics)

%3%^%s%I **set tics** $O!"A4$F$N<4$NL\@9$j$N9o$_$H%i%Y%k$r0lEY$K@)8f$7$^$9!#

L\@9$j$O **unset tics** $G>C$(!"**set tics** $GL\@9$j$,$D$-$^$9 (%G%U%)%k%H)!#8D!9$N<4$NL\@9$j$O!"$3$l$H$OJL$N%3%^%s%I **set xtics**, **set ztics** $J$I$r;H$C$F@)8f$G$-$^$9!#

=q<0:

```
set tics {axis | border} {{no}mirror}
         {in | out} {front | back}
         {{no}rotate {by <ang>}} {offset <offset> | nooffset}
         {left | right | center | autojustify}
         {format "formatstring"} {font "name{,<size>}"} {{no}enhanced}
         { textcolor <colorspec> }
```

```
set tics scale {default | <major> {,<minor>}}
unset tics
show tics
```

%*%W%7%g%s$O!"8D!9$N<4 (x, y, z, x2, y2, cb) $K$bE,MQ$G$-$^$9!#Nc:

```
set xtics rotate by -90
unset cbtics
```

<4$N9o$_$N@~B0@-$O!"$9$Y$F%0%i%U$N6-3&(0J2<;2>H: **set border (p. 115)**) $HF1$8$b$N$r;H$C$FIA$+$l$^$9!#

tics $N **back** $^$?$O **front** $N@_Dj$O!"2D IA2h(splot $OIT2D) $K$N$_$9$Y$F$N<4$K1 EYE,MQ$5$l$^$9!#$3$l$O!" L\@9$j$HIA2hMWAG$,=E$J$C$?>l9g$KL\@9$j$rIA2hMWAG$NA0LL$K=P$9$+!"1 |$KCV$/$+$r@)8f$7$^$9!#

**axis** $H **border** $O **gnuplot** $KL\@9$j (L\@9$j$N9o$_<+?H$H$=$N8+=P$7) $r!"$=$l$>$l<4$K$D$1$k$N$+!"6-3& $K$D$1$k$N$+$r;X<($7$^$9!#<4$,6-3&$K$H$F$b6a$$>l9g! "**axis** $r;HMQ$9$k$H6-3&$,I=<($5$l$F$$$l$P (0J2<;2 >H:**set border (p. 115)**) L\@9$j$N8+=P$7J8;z$r6-3&$N30$K=P$7$F$7$^$&$G$7$g$&!#$3$N>l9g<+F0E*$J%l%$%" %&%H%"%k%4%j%:% `$K$h$kM>Gr@_Dj$OBgDq$h$/$J$$$b$N$H$J$C$F$7$^$$$^$9!#

**mirror** $O **gnuplot** $KH?BPB&$N6-3&$NF1$80LCV$K!"8+=P$7$N$J$$L\@9$j$r=PNO$9$k$h$&;X<($7$^$9!#**nomirror** $O!"$"$J$?$,A[A |$7$F$$$kDL$j$N$3$H$r9T$J$$$^$9!#

**in** $H **out** $OL\@9$j$N9o$_$rFbB&$KIA$/$+30B&$KIA$/$+$r@Z$jJQ$($^$9!#

**set tics scale** $O!"L\@9$j$N9o$_$NBg$-$5$r@)8f$7$^$9!#:G=i$N <major> $NCM$K$O!"<+F0E*$K@8@.$5$l!"$^ $?%f!<%6$b;XDj$G$-$kBgL\@9$j (%l%Y%k 0) $r;XDj$7!"2 $DL\$N <minor> $NCM$K$O!"<+F0E*$K@8@.$5$l!"$^ $?%f!<%6$b;XDj$G$-$k>.L\@9$j (%l%Y%k 1) $r;XDj$7$^$9!#<major> $N%G%U%)%k%H$O 1.0 $G!"<minor> $N%G %U%)%k%H$O <major>/2 $G$9!#$5$i$KCM$rDI2C$9$l$P!"%l%Y%k 2, 3, ... $NL\@9$j$NBg$-$5$K$J$j$^$9!#**set tics scale default** $G%G%U%)%k%H$NL\@9$j$NBg$-$5$KI |5"$7$^$9!#

**rotate** $O!"J8;zNs$r 90 EY2sE>$5$;$F=PNO$5$;$h$&$H$7$^$9!#$3$l$O!"J8;zNs$N2sE>$r%5%]!<%H$7$F$$$k=P NO%I%i%$%P (terminal) $G$O<B9T$5$l$^$9!#**norotate** $O$3$l$r%-%c%s%;%k$7$^$9!#**rotate by <ang>** $O3QEY <ang> $N2sE>$r9T$J$$$^$9$,!"$3$l$O$$$/$D$+$N=PNO7A<0 (terminal) $G%5%]!<%H$5$l$F$$$^$9!#

x $H y <4$NBgL\@9$j$N%G%U%)%k%H$O **border mirror norotate** $G!"x2, y2 <4$O **border nomirror norotate** $,%G%U%)%k%H$G$9!#z <4$N%G%U%)%k%H$O **nomirror** $G$9!#

<offset> $O x,y $+$^$?$O x,y,z $N7A<0$G$9$,!"$=$l$K:BI87O$rA*Br$7$F!"$=$NA0$K **first**, **second**, **graph**, **screen**, **character** $N$$$:$l$+$r$D$1$k$3$H$b$G$-$^$9!#<offset> $O!"L\@9$j$N8+=P$7J8;zNs$N%G%U%)%k%H $N0LCV$+$i$N$:$i$70LCV$G!"$=$N%G%U%)%k%H$NC10L7O$O **character** $G$9!#>\:Y$O!"0J2<;2>H: **coordinates (p. 26)**!#**nooffset** $O offset $r OFF $K$7$^$9!#

%G%U%)%k%H$G$O8+=P$7%i%Y%k$O!"H~$7$$7k2L$r@8$`$h$&$K!"<4$H2sE>3Q$K0MB8$7$?0LCV$K<+F0E*$KB7$($i$l$^$9 $,!"5$$K$$$i$J$1$l$P!"L@<(E*$K **left**, **right**, **center** $N%-!<%o!<%I$K$h$j0LCVB7$($rJQ99$G$-$^$9!#**autojustify** $G%G%U%)%k%H$N5sF0$KI |5"$7$^$9!#

%*%W%7%g%s$J$7$N **set tics** $O!"Bh 1 <4$KBP$9$k6@1G (mirror) $HFbB&8~$-L\@9$j$N9o$_$r%G%U%)%k%H$N5sF0$K I |5"$7$^$9$,!"$=$NB>$NA4$F$N%*%W%7%g%s$O!"D>A0$NCM$rJ];}$7$^$9!#

BgL\@9$j (%i%Y%k$N$D$/) $NB>$N@)8f$K4X$7$F$O!"0J2<;2>H: **set xtics (p. 187)**!#>.L\@9$j$N@)8f$K4X$7$F$O!" 0J2<;2>H: **set mxtics (p. 152)**!#$3$l$i$N%3%^%s%I$O!"3F<4$NFHN)$J@)8f$rDs6!$7$^$9!#

## Ticslevel

8=:_$O?d>)$5$l$F$$$^$;$s!#0J2<;2>H: **set xyplane (p. 191)**!#

## Ticscale

%3%^%s%I **set ticscale** $O8=:_$O?d>)$5$l$F$$$^$;$s!#Be$o$j$K **set tics scale** $r;H$C$F$/$@$5$$!#

## %?%$%`%9%?%s%W (timestamp)

%3%^%s%I **set timestamp** $O8=:_$N;~9o$HF |IU$r%0%i%U$NM>Gr$KI=<($7$^$9!#

=q<0:

```
set timestamp {"<format>"} {top|bottom} {{no}rotate}
              {offset <xoff>{,<yoff>}} {font "<fontspec>"}
              {textcolor <colorspec>}
unset timestamp
show timestamp
```

=q<0J8; zNs (format) $O! "=q$+$1$kF |IU$H; ~9o$N=q<0$K; HMQ$5$1$^$9! #%G%U% )%k%H$O asctime() $,; HMQ$9$k "%a %b %d %H:%M:%S %Y" $G$9 (MKF |! "7nL>! "F |! "; ~! "J,! "IC! "4 7e$N@>Nq) ! #**top** $H **bottom** $r; H$C$F! "F | IU$NG [CV$r: 8>e! ": 82<$N$$:$1$NM>Gr$K$9$k$+$rA *Br$G$–$^$9 (%G%U% )%k%H$O: 82<) ! #**rotate** $O! "F |IU$r?bD> J}8~$K=q$–=P$7$^$9! #D j?t <xoff> ! "<yoff> $O$:$1 (offset) $r0UL#$7! "$3$1$K$h$C$F$h$jE,@Z$J0LCV7h$a$,9T $ ($^$9! #<font> $OF |IU$,=q$+$1$k%U% )%s%H$r; XD j$7$^$9! #

**timestamp** $NBe$o$j$K>JN,L> **time** $r; H$C$F$b9=$$$^$;$s! #

Nc:

```
set timestamp "%d/%m/%y %H:%M" offset 80,-2 font "Helvetica"
```

F |IU$N=q<0J8; zNs$K4X$9$k>\$7$$>pJs$K$D$$$F$O! "0J2<; 2>H: **set timefmt (p. 180)** ! #

## F |; ~%G! <% ?F~NO=q<0 (timefmt)

$3$N%3% ^%s%I$O! "%G! <% ?$,F |; ~$N7A<0$K$J$C$F$$$k>19g$K! "$=$N; ~7ONs%G! <% ?$KE,MQ$5$1$^$9! #$3$1$O%3% ^%s %I **set *data time** $bM?$ ($i$1$F$$$J$$$H0UL#$,$"$j$^$;$s! #

=q<0:

```
set timefmt "<format string>"
show timefmt
```

J8; zNs0z?t (<format string>) $O **gnuplot** $KF |; ~%G! <% ?$r%G! <% ?%U% !%$%k$+$i$I$N$h$&$KFI$ '$+$r; X< ($7$^ $9! #M–8z$J=q<0$O0J2<$NDL$j$G$9:

; ~7ONs%G! <% ?=q<0; XD j; R

| =q<0 | @bL@ |
|---|---|
| %d | 2 ?F \|, 1–31 |
| %m | 2 ?7n, 1–12 |
| %y | 2 ?G/, 0–99 |
| %Y | 2 ?G/, 4 7e |
| %j | 1 G/$N2 ?F \|L\, 1–365 |
| %H | 2 ?; ~, 0–24 |
| %M | 2 ?J,, 0–60 |
| %s | Unix epoch (1970-01-01, 00:00 UTC) $+$i$NIC?t |
| %S | 2 ?IC (=PNO$G$O 0–60 $N@0?t! "F~NO$G$O<B?t) |
| %b | 7nL> (1Q8 1) $N 3 J8; z>JN,7A |
| %B | 7nL> (1Q8 1) |

G$0U$NJ8; z$rJ8; zNsCf$G; HMQ$G$–$^$9$,! "5,B'$K=>$C$F$$$kI,MW$,$"$j$^$9! #\t (%?%V) $OG'<1$5$1$^$9! #%P%C %/%9%i%C%7%e + 8 ?J?tNs (\nnn) $O$=$1$,< ($9J8; z$KJQ4 9$5$1$^$9! #F |; ~MWAG$NCf$KJ,N%J8; z$,$J$$>19g! "%d, %m, %y, %H, %M, %S $O$=$1$>$1 2 7e$N?t; z$rFI$_9~$_$^$9! #%S $G$NFI$_9~$_$G> .?tE@$,$=$N%U% #! <%k%I $K$D$$F$$$k>19g$O! "$=$N> .?tE@$D$–$N?t$r> .?t$NIC; XD j$@$H2r<a$7$^$9! #%Y $O 4 7e! "%j $O 3 7e$N?t; z$r FI$_9~$_$^$9! #%b $O 3 J8; z$r! "%B $OI,MW$JJ,$@$1$NJ8; z$rMW5a$7$^$9! #

6uGr (%9%Z! <%9) $N0 7$$$O$d$d0c$$$^$9! #=q<0J8; zNsCf$N 1 $D$N6uGr$O! "%U% !%$%kCf$N 0 8D! "$"$k$$$O 1 $D0J >e$N6uGrJ8; zNs$rI=$7$^$9! #$9$J$o$A! ""%H %M" $O "1220" $d "12 20" $r "12 20" $HF1$8$h$&$KFI$_$^$9! #

%G! <% ?Cf$NHs6uGrJ8; z$N=8$^$j$=$1$>$1$O! "**using n:n** ; XD j$N0 1$D0 1$D$NNs$H% +% &% s%H$5$1$^$9! #$h$C$F **11:11 25/12/76 21.0** $O 3 Ns$N%G! <% ?$HG'<1$5$1$^$9! #: .Mp$rHr$1$k$ ?$a$K! "F |; ~%G! <% ?$,4 ^$^$1$k>19g **gnuplot** $O! "$"$J$ ?$N **using** ; XD j$,4 0 `z$J$b$N$G$"$k$H2>D j$7$^$9! #

F |IU%G! <% ?$,MKF |! "7n$NL>A0$r4 ^$s$G$$$k>19g! "=q<0J8; zNs$G$=$1$rGS= |$7$J$1$1$P$$$1$^$;$s$,! ""%a", "%A", "%b", "%B" $G$=$1$i$rI=< ($9$k$3$H$O$G$–$^$9! #**gnuplot** $O?tCM$+$i7n$dMKF |$r@5$7$/5a$a$^$9! # $3$1$i! "5Z$SF |; ~%G! <% ?$N=PNO$NB>$N% *%W% 7%g% s$N>\: Y$K4X$7$F$O! "0J2<; 2>H: **set format (p. 131)** ! #

2 7e$N@>Nq$r %y $GFI$ `>19g! "69-99 $O 2000 G/L$K~! "00-68 $O 2000 G/0J8e$H8+$J$7$^$9! #Cm0U: $3$1$O! " UNIX98 $N;EMM$K9g$o$;$?$b$N$G$9$,! "$3$N4 7Nc$O$ "$A$3$A$G0c$$$,$ "$k$N$G! "2 7e$N@>NqCM$OK\<AE*$K$ "$$ $^$$G$9! #

B>$N>pJs$K$D$$$F$O! "0J2<$b;2>H: **set xdata (p. 184)**, **time/date (p. 50)**! #

Nc:

```
set timefmt "%d/%m/%Y\t%H:%M"
```

$O! "**gnuplot** $KF|IU$H;~4V$,%?%V$GJ,N%$7$F$$$k$3$H$r65$($^$9($?$@$7! "$"$J$?$N%G! <%?$r$h! <$/8+$F$/$@$5$$! #%?%V$@$C$?$b$N$,$I$3$+$GJ#?t$N%9%Z! <%9$KJQ49$5$1$F$$$^$;$s$+? =q<0J8;zNs$O%U%!%$%kCf$K<B:]$K$"$kJ*$H0lCW$7$F$$$J$1$1$P$J$j$^$;$s)! #0J2<$b;2>H; ~7ONs%G! <%? `(time data)` %G%b! #

## %0%i%U%?%$%H%k (title)

%3%^%s%I **set title** $O! "IA2h$N>e$N??Cf$K=q$+$1$kIA2h%?%$%H%k$r@8@.$7$^$9! #**set title** $O **set label** $NFC<l$J$b$N! "$H$_$J$;$^$9! #

=q<0:

```
set title {"<title-text>"} {offset <offset>} {font "<font>{,<size>}"}
          {{textcolor | tc} {<colorspec> | default}} {{no}enhanced}
show title
```

<offset> $r x,y $+$^$?$O x,y,z $N7A<0$G;XDj$7$?>19g$O! "%?%$%H%k$OM?$($i$1$?CM$@$10\F0$5$1$^$9! #$=$1$K :BI87O$rA*Br$7$F! "$=$NA0$K **first**, **second**, **graph**, **screen**, **character** $N$$$:$1$+$r$D$1$k$3$H$b$G$-$^$9! # >\:Y$O! "0J2<;2>H: **coordinates (p. 26)**! #%G%U%)%k%H$G$O **character** :BI87O$,;H$o$1$^$9! #Nc$ ($P! ""**set title offset 0,-1**" $O%?%$%H%k$N y J}8~$N0lCV$N$_JQ99$7! "Bg$6$C$Q$K8@$C$F 1 J8;zJ,$N9b$5$@$1%?%$%H%k$r 2<$K2<$2$^$9! #1 J8;z$NBg$-$5$O! "%U%)%s%H$H=PNO7A<0$NN>J}$K0MB8$7$^$9! #

<font> $O%?%$%H%k$,=q$+$1$k%U%)%s%H$r;XDj$9$k$N$K;H$o$1$^$9! #<size> $NC10L$O! "$I$N=PNO7A<0 (terminal) $r;H$C$F$$$k$+$K$h$C$FJQ$o$j$^$9! #

**textcolor <colorspec>** $O! "J8;z$N?'$rJQ99$7$^$9! #<colorspec> $O! "@~<o! "rgb ?'! "$^$?$O%Q%l%C%H$X$N 3dEv$N$$$:$1$+$,;XDj$G$-$^$9! #0J2<;2>H: **colorspec (p. 41)**, **palette (p. 161)**! #

**noenhanced** $O! "3HD%J8;zNs=hM} (enhanced text) %b! <%I$,M-8z$K$J$C$F$$$k>19g$G$b! "%?%$%H%k$r3HD%J8;zNs=hM}$5$;$J$$$h$&$K$7$^$9! #

**set title** $r%Q%i%a! <%?$J$7$G;H$&$H%?%$%H%k$r>C5n$7$^$9! #

%P%C%/%9%i%C%7%eJ8;zNs$N:rMQ! "5Z$SJ8;zNs$r0O$ `C10 10 zMQId$HFs=E0 zMQId$N0c$$$K$D$$$F$O! "0J2<;2>H: **syntax (p. 49)**! #

## Tmargin

%3%^%s%I **set tmargin** $O>e$NM>Gr$N%5%$%:$r%;%C%H$7$^$9! #>\:Y$O! "0J2<;2>H: **set margin (p. 146)**! #

## Trange

%3%^%s%I **set trange** $O! "G^2pJQ?t%b! <%I! "$"$k$$$O6K:BI8%b! <%I$G$N x,y $NCM$r7W;;$9$k$N$K;H$o$1$kG^2p JQ?t$NHO0O$r@_Dj$7$^$9! #>\:Y$O! "0J2<;2>H: **set xrange (p. 186)**! #

## Ttics

%3%^%s%I **set ttics** $O! "6K:BI8%0%i%U$NK~0O$KL\@9$j9o$_$r$D$1$^$9! #$=$1$O! "**set border polar** $H$7$?>1 9g$O6-3&$K$J$j$^$9$,! "$=$&$G$J$1$1$P6K:BI83J;R$N! "r <4$K1h$C$F:G$b1&C<$N9o$_$N>1=j$K=q$+$1$k:G$b30 B&$N1_<~$K$J$j$^$9! #0J2<;2>H: **set grid (p. 134)**, **set rtics (p. 168)**! #3Q$N0lCV$O! ">o$KEY$NC10L$G%i%Y %kIU$1$5$1$^$9! #8=:_$N3Q$NHO0O$N@_Dj (trange) $K4X78$J$/! "F1?41_A4BN$K9o$_%i%Y%k$r$D$1$k$3$H$,$G$-$^ $9! #9o$_%i%Y%k$,I,MW$JHO0O$N@_Dj$O! "2<$K< ($9Nc$N$h$&$K$7$F$/$@$5$$! #9o$_$K4X$9$k$D$I2CB0@-$r@_Dj$9$k $3$H$b$G$-$^$9! #0J2<;2>H: **xtics (p. 187)**! #

```
set ttics -180, 30, 180
set ttics add ("Theta = 0" 0)
set ttics font ":Italic" rotate
```

## Urange

**set urange** $H **set vrange** $O! "**splot** $NG^2pJQ?t%b!<%I$G x,y,z $NCM$r7W;;$9$k$N$K;H$o$l$kG^2pJQ?t$NHO 0O$r@_Dj$7$^$9! #>\:Y$O! "0J2<;2>H:**set xrange (p. 186)**!#

## Variables

**show variables** %3%^%s%I$O%f!<%6Dj5AJQ?t$HFbItJQ?t$N8=:_$NCM$N0lMw$rI=<($7$^$9! #gnuplot $O! "GPVAL_, MOUSE_, FIT_, TERM_ $G;O$^$kL>A0$r; }$DJQ?t$rFbIt$GDj5A$7$F$$$^$9! #

=q<0:

```
show variables      # GPVAL_ $G;O$^$k$b$N0J30$NJQ?t$rI=<(
show variables all  # GPVAL_ $G;O$^$k$b$N$b4^$aA4$F$NJQ?t$rI=<(
show variables NAME # NAME $G;O$^$kJQ?t$N$_$rI=<(
```

## Version

%3%^%s%I **show version** $O8=:_5/F0$7$F$$$k gnuplot $N%P!<%8%g%s!":G=*=$@5F|!"Cx:n8"<T$H!"FAQ $d info-gnuplot %a!<%j%s%0%j%9%H!"%P%0%l%]!<%H@h$N%a!<%k%"%I%l%9$rI=<($7$^$9! #BPOŒ*$K%W%m%0%i%'$,8F$P$l$F $$$k$H$-$O%9%/%j!<%s>e$K$=$N>pJs$rI=<($7$^$9! #

=q<0:

```
show version {long}
```

**long** %*%W%7%g%s$rM?$($k$H!"$5$i$K%*%Z%l!<%F%#%s%0%7%9%F%'!"**gnuplot** %$%s%9%H!<%k;~$N%3%s%Q%$%k%*%W%7%g%s!"%X%k%W%U%!%$%k$NCV$->l=j!"$=$7$F(:F$S) M-MQ$J%a!<%k%"%I%l%9$rI=<($7$^$9! #

## ; k@~J}8~ (view)

%3%^%s%I **set view** $O **splot** $N;k@~$N3QEY$r@\_Dj$7$^$9! #$3$l$O! "%0%i%UIA2h$N 3 <!85:BI8$r$I$N$h$&$K 2 <!85$N2hLL (screen) $KEj1F$9$k$+$r@)8f$7$^$9! #$3$l$O! "IA2h$5$l$?%G!<%?$N2sE>$H=L<\$N@)8f$rM?$($F$/$l$^ $9$,@5<Ml F$7$+%5%]!<%H$7$F$$$^$;$s! #3 <!85<Ml F!"$*$h$S 2 <!85IA2hE*CO?^>e$X$N 2 <!85D>8r<Ml F$,%5%]!< %H$5$l$F$$$^$9! #

=q<0:

```
set view <rot_x>{,{<rot_z>}{,{<scale>}{,<scale_z>}}}
set view map {scale <scale>}
set view {no}equal {xy|xyz}
set view azimuth <angle>
show view
```

$3$3$G <rot\_x> $H <rot\_z> $O! "2hLL$KEj1F$5$l$k2>A[E*$J 3 <!85:BI87O$N2sE>3Q (C10L$OEY) $N@)8f$G!":G =i$O ($9$J$o$A2sE>$,9T$J$o$l$kA0$O) 2hLIFb$N?eJ?<4$O x, 2hLIFb$N?bD><4$O y, 2hLL<+?H$K?bD>$J<4$, z $H $J$C$F$$$^$9! #:G=i$O x <4$N<~$j$K <rot_x> $@$12sE>$5$l$^$9! #<!$K!"?7$7$$z <4$N<~$j$K <rot\_z> $@$12s E>$5$l$^$9! #

%3%^%s%I **set view map** $O! "%0%i%U$rCO?^$N$h$&$KI=<($9$k$N$K;H$$$^$9! #$3$l$OEy9b@~ (**contour**) $N%0%i %U$d!"pm3d %b!<%I$K$h$k 2 <!852 9EYJ,I[$J$I$G **with image** $h$j$b$'$7$mM-MQ$G$9! #8e<T$G$O! "F~NO%G!< %?E@$N%U%#%k%?MQ$N **zrange** $N@\_Dj!"$*$h$S?'$NHO0O$N=L<\$K4X$9$k **cbrange** $N@_Dj$rE,@Z$K9T$&$3$H$KCm 0U$7$F$/$@$5$$! #

<rot\_x> $O [0:180] $NHO0O$K@)8B$5$l$F$$$F!"%G%U%)%k%H$G$O 60 EY$G$9! #<rot_z> $O [0:360] $NHO0O$K@)8B$5 $l$F$$$F!"%G%U%)%k%H$G$O 30 EY$G$9! #<scale> $O **splot** A4BN$N?-=lN ($r@)8f$7!"<scale\_z> $O z <4$N?-=L$N $\_$r9T$J$$$^$9! #?-=lN ($N%G%U%)%k%H$O$I$A$i$b 1.0 $G$9! #

Nc:

```
set view 60, 30, 1, 1
set view ,,0.5
```

:G=i$NNc$O 4 $D$NA4$F$r%G%U%)%k%H$NCM$K$7$F$$$^$9!#2 $D$a$NNc$O=L>.N($N$_$r 0.5 $KJQ99$7$F$$$^$9!#

### Azimuth

```
set view azimuth <angle-in-degrees>
```

azimuth $N@_Dj$O!"3 <!85%0%i%U (splot) $Nz <4$N8~$-$K1F6A$7$^$9!#%G%U%)%k%H$O azimuth = 0 $G!"%0%i%U $Nz <4$O%9%/%j!<%s$N?eJ?J}8~$KBP$7$F?bD>$JJ?LL$K4^$^$k!"$9$J$o$A!"z <4$N 2 <!85<MlF$,%9%/%j!<%s$N1t D>J}8~$K$J$j$^$9!#0 $G$J$$ azimuth $O; k3&$r8 6E@$K4X$7$F2sE>$7!"z <4$N<MlF$O1tD>J}8~$G$O$J$/$J$j$^$9!# azimuth = 90 $G$O z <4$O1tD>J}8~$G$O$J$/!"?eJ?J}8~$K$J$j$^$9!#

### Equal_axes

%3%^%s%I **set view equal xy** $O x <4$H y <4$NC10L$ND9$5$,6/@)E*$KEy$7$/$J$k$h$&$K=L<\$r9g$o$;!"%0%i%U $,%Z!<%8$KCzEY9g$&$h$&$K$=$N=L<\$rA*Br$7$^$9!#%3%^%s%I **set view equal xyz** $O!"$5$i$K z <4$b x $H y <4$K9g$&$h$&$K$7$^$9$,!"8=:_$N z <4$NHO0O$,!"IA2h6-3&$NHO0O$K9g$&J]>Z$O$"$j$^$;$s!#%G%U%)%k%H$G$O!" 3 $D$N<4$OFHN)$KM-8z$JNN0h$rKd$a$k$h$&$K?-=L$5$1$^$9!#

0J2<$b; 2>H: **set xyplane (p. 191)**!#

## Vrange

%3%^%s%I **set urange** $H **set vrange** $O!"**splot** $NG^2pJQ?t (%Q%i%a!<%?) %b!<%I$G x, y, z $NCM$r7W;;$9$k$N $K;H$o$1$kG^2pJQ?t$NHO0O$r@_Dj$7$^$9!#>\:Y$O!"0J2<; 2>H: **set xrange (p. 186)**!#

## X2data

%3%^%s%I **set x2data** $O x2 (>e) <4$N%G!<%?$r; ~7ONs (F |; ~) 7A<0$K@_Dj$7$^$9!#>\:Y$O!"0J2<; 2>H: **set xdata (p. 184)**!#

## X2dtics

%3%^%s%I **set x2dtics** $O x2 (>e) <4$NL\@9$j$rMKF |$KJQ99$7$^$9!#>\:Y$O!"0J2<; 2>H: **set xdtics (p. 184)**!#

## X2label

%3%^%s%I **set x2label** $O x2 (>e) <4$N8+=P$7$r@_Dj$7$^$9!#>\:Y$O!"0J2<; 2>H: **set xlabel (p. 185)**!#

## X2mtics

%3%^%s%I **set x2mtics** $O!"x2 (>e) <4$r 1 G/$N3F7n$K@_Dj$7$^$9!#>\:Y$O!"0J2<; 2>H: **set xmtics (p. 185)**!#

## X2range

%3%^%s%I **set x2range** $O x2 (>e) <4$NI=<($5$1$k?eJ?HO0O$r@_Dj$7$^$9!#%3%^%s%I%*%W%7%g%s$N$9$Y$F$N@b L@$K$D$$$F$O!"0J2<; 2>H: **set xrange (p. 186)**!#0J2<$b; 2>H: **set link (p. 144)**!#

## X2tics

%3%^%s%I **set x2tics** $O x2 (>e) <4$N!"8+=P$7IU$1$5$1$kBgL\@9$j$N@)8f$r9T$J$$$^$9!#>\:Y$O!"0J2<; 2>H: **set xtics (p. 187)**!#

## X2zeroaxis

%3%^%s%I **set x2zeroaxis** $O!"8 6E@$rDL$k x2 (>e) <4 (y2 = 0) $rIA$-$^$9! #>\:Y$O!"0J2<; 2>H **set zeroaxis (p. 194)**!#

## <4Kh$N%G!<%?<oN`;XDj (xdata)

$3$N%3%^%s%I$O x <4$N%G!<%?7A<0$N2r<a$r@)8f$7$^$9! #B>$N<4$=$l$>$l$K$bF1MM$N%3%^%s%I$,5 !G=$7$^$9! #

=q<0:

```
set xdata time
show xdata
```

**ydata**, **zdata**, **x2data**, **y2data**, **cbdata** $K$bF1$8=q<0$,Ev$F$O$^$j$^$9! #

**time** %*%W%7%g%s$O%G!<%?$,ICC10L$NF|;~%G!<%?$G$"$k$3$H$rEA$($^$9! #8=:_$N gnuplot $O;~9o$r%_%jIC$N@:EYJ]B8$7$^$9! #

%*%W%7%g%s$J$7$N>l9g$O!"%G!<%?$N2r<aJ}K!$rDL>o$N7A<0$KLa$7$^$9! #

## F|;~%G!<%? (time)

**set xdata time** $O!"x :BI8$,%_%jIC@:EY$NF|;~%G!<%?$G$"$k$3$H$r0UL#$7$^$9! #**set ydata time** $H$$$&F1MM$N%3%^%s%I$b$"$j$^$9! #

F|;~%G!<%?$NF~NO$H=PNO$N2r<a$K$O!"JL!9$N=q<05 !9=$,$"$j$^$9! #%U%!%$%k$+$i$NF~NO%G!<%?$O!"A4BN$KDIMQ$9$k **timefmt** $r;H$&$+!"$^$?$O plot %3%^%s%IFb$G timecolumn() 4X?t$r;H$C$FFI$_9~$_$^$9! #$3$NF~NO5 !9=$O!"<4$NHO0O (range) $r@_Dj$9$k$H$-$K;~4V$NCM$r;HMQ$9$k: ]$K$bE,MQ$5$l$^$9! #0J2<; 2>H **set timefmt (p. 180)**, **timecolumn (p. 32)**!#

Nc:

```
set xdata time
set timefmt "%d-%b-%Y"
set xrange ["01-Jan-2013" : "31-Dec-2014"]
plot DATA using 1:2
```

$^$?$O

```
plot DATA using (timecolumn(1,"%d-%b-%Y")):2
```

=PNO!"$9$J$o$A<4$K1h$C$?L\@9$j$N%i%Y%k$d!"%^%&%9A`:n$G$N:BI8=PNO$K$D$$$F$O!"%G%U%)%k%H$G$O!"IC$G$NFbIt;~9o$+$iF|;~$rI=8=$9$kJ8;zNs$X$NJQ49$K$O!"4X?t 'strftime' (unix $G$=$l$rD4$Y$k$K$O "man strftime" $H%?%$%W$7$F$/$@$5$$) $r;H$$$^$9! #**gnuplot** $O$3$l$rE,Ev$K0UL#$N$"$k=q<0$GI=<($7$h$&$H$7$^$9$,!"**set format x** $+ **set xtics format** $N$$:$l$+$r;H$C$F%+%9%?%^%$%:$9$k$3$H$b$G$-$^$9! #FCJL$J;~4V=q<0;XDj;R$K4X$7$F$O!"0J2<; 2>H **time_specifiers (p. 132)**! #B>$N>pJs$K$D$$$F$O!"0J2<$b; 2>H **time/date (p. 50)**! #

## MKF|<4L\@9$j (xdtics)

%3%^%s%I **set xdtics** $O x <4$NL\@9$j$N9o$_$rMKF|$KJQ49$7$^$9 (0=Sun, 6=Sat)! #6 $r1[$($k>l9g$O 7 $K$h$kM>$j$,;H$o$l$^$9! #**unset xdtics** $O$=$N8+=P$7$r%G%U%)%k%H$N7A<0$KLa$7$^$9! #B>$N<4$K$bF1$8$3$H$r9T$J$&F1MM$N%3%^%s%I$,MQ0U$5$l$F$$$^$9! #

=q<0:

```
set xdtics
unset xdtics
show xdtics
```

**ydtics**, **zdtics**, **x2dtics**, **y2dtics**, **cbdtics** $K$bF1$8=q<0$,Ev$F$O$^$j$^$9! #

0J2<$b; 2>H **set format (p. 131)**! #

## <4%i%Y%k (xlabel)

%3%^%s%I **set xlabel** $Ox <4$N8+=P$7$r@_Dj$7$^$9!#B>$N<4$K$b8+=P$7$r@_Dj$9$kF1MM$N%3%^%s%I$,$"$j$^$9!#

=q<0:

```
     set xlabel {"<label>"} {offset <offset>} {font "<font>{,<size>}"}
                {textcolor <colorspec>} {{no}enhanced}
                {rotate by <degrees> | rotate parallel | norotate}
     show xlabel
```

F1$8=q<0$, **x2label**, **ylabel**, **y2label**, **zlabel**, **cblabel** $K$bE,MQ$5$l$^$9!#

<offset> $rx,y $+$^$?$Ox,y,z $N7A<0$G;XDj$7$?>l9g$O!"8+=P$7$OM?$($i$l$?CM$@$10\F0$5$l$^$9!#$=$l$K:B I87O$rA*Br$7$F!"$=$NA0$K **first**, **second**, **graph**, **screen**, **character** $N$$$:$l$+$r$D$1$k$3$H$b$G$-$^$9!# >\:Y$O!"0J2<;2>H: **coordinates (p. 26)**!#%G%U%)%k%H$G$O **character** :BI87O$,;H$o$l$^$9!#Nc$($P!""**set xlabel offset -1,0**" $O8+=P$7$Nx J}8~$N0LCV$N$_JQ99$7!"Bg$6$C$Q$K8@$C$F1 J8;zJ,$NI}$@$18+=P$7$r:8$K $:$i$7$^$9!#1 J8;z$NBg$-$5$O!"%U%)%s%H$H=PNO7A<0$NN>J}$K0MB8$7$^$9!#

<font> $O8+=P$7$,=q$+$l$k%U%)%s%H$r;XDj$9$k$N$K;H$o$l$^$9!#%U%)%s%H$N<size> (Bg$-$5) $NC10L$O!"$I $s$J=PNO7A<0$r;H$&$+$K0MB8$7$^$9!#

**noenhanced** $O!"3HD%J8;zNs=hM} (enhanced text) %b!<%I$,M-8z$K$J$C$F$$$k>l9g$G$b!"%i%Y%kJ8;zNs$r3HD% J8;zNs=hM}$5$;$J$$$h$&$K$7$^$9!#

8+=P$7$r>C5n$9$k$K$O!"%*%W%7%g%s$r$D$1$:$K<B9T$7$^$9!#Nc: "**set y2label**"

<4$N8+=P$7$N%G%U%)%k%H$N0LCV$O0J2<$NDL$j$G$9:

xlabel: x <4$N8+=P$7$O%0%i%U$N2<$N??Cf

ylabel: y <4$N8+=P$7$O%0%i%U$N:8$N??Cf$G!"?eJ?J}8~$K=q$+$l$k$+?bD>J}8~$K$J$k$+$O=PNO7A<00MB8

zlabel: z <4$N8+=P$7$O<4$NI=<(HO0O$h$j>e$G!"8+=P$7$N??Cf$,z <4$N??>e

cblabel: ?'8+K\(color box) $N<4$N8+=P$7$OH"$K1h$C$FCf1{B7$($5$l!"H"$N8~$-$,?eJ?$J$i2<$K!"?bD>$J$i1&$K

y2label: y2 <4$N8+=P$7$Oy2 <4$N1&!#$=$N0LCV$O!"=PNO7A<00MB8$Gy <4$HF1MM$N5,B'$G7hDj!#

x2label: x2 <4$N8+=P$7$O%0%i%U$N>e$G!"%?%$%H%k$h$j$O2<!#$3$l$O!"2~9TJ8;z$r;H$($P!"$=$l$K$h$kJ#?t$N 9T$+$i$J$kIA2h%?%$%H%k$Gx2 <4$N8+=P$7$r@8@.$9$k$3$H$b2DG=!#Nc:

```
     set title "This is the title\n\nThis is the x2label"
```

$3$l$OFs=E0zMQId$r;H$&$Y$-$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#$3$N>l9g!"$b$A$m$s2 $D$N9T$GF1$8%U%)%s%H$, ;H$o$l$^$9!#

2 <!85IA2h$N>l9g$Nx, x2, y, y2 <4$N%i%Y%k$NJ}8~(2sE>3Q) $O!"**rotate by** < 3QEY> $r;XDj$9$k$3$H$GJQ99 $G$-$^$9!#3 <!85IA2h$Nx, y <4$N%i%Y%k$NJ}8~$O%G%U%)%k%H$G$O?eJ?J}8~$K$J$C$F$$$^$9$,!"**rotate parallel** $r;XDj$9$k$3$H$G<4$KJ?9T$K$9$k$3$H$,$G$-$^$9!#

$b$7<4$N0LCV$N%G%U%)%k%H$N0LCV$,5$$KF~$i$J$$$J$i$P!"Be$o$j$K **set label** $r;H$C$F$/$@$5$$!#$3$N%3%^%s %I$OJ8;zNs$r$I$3$KG[CV$9$k$+$r$b$C$H<+M3$K@)8f$G$-$^$9!#

%P%C%/%9%i%C%7%eJ8;zNs$N:nMQ!"5Z$SJ8;zNs$r0O$`C10l0zMQId$HFs=E0zMQId$N0c$$$K4X$9$k$h$j>\$7$$>pJs$K $D$$$F$O!"0J2<;2>H: **syntax (p. 49)**!#

## 7n<4L\@9$j (xmtics)

%3%^%s%I **set xmtics** $Ox <4$NL\@9$j$N8+=P$7$r7n$KJQ49$7$^$9!#1=Jan (1 7n)!"12=Dec (12 7n) $H$J$j$^ $9!#12 $r1[$($?t;z$O!"12 $G3d$C$?$"$^$j$N7n$KJQ49$5$l$^$9!#**unset xmtics** $GL\@9$j$O%G%U%)%k%H$N8+ =P$7$KLa$j$^$9!#B>$N<4$KBP$7$F$bF1$8Lr3d$r$9$kF1MM$N%3%^%s%I$,MQ0U$5$l$F$$$^$9!#

=q<0:

```
     set xmtics
     unset xmtics
     show xmtics
```

**x2mtics**, **ymtics**, **y2mtics**, **zmtics**, **cbmtics** $K$bF1$8=q<0$,E,MQ$5$l$^$9!#

0J2<$b;2>H: %3%^%s%I **set format (p. 131)**!#

## <4HO0O;XDj (xrange)

%3%^%s%I **set xrange** $OI=<($5$1$k?eJ?J}8~$NHO0O$r;XDj$7$^$9!#B>$N<4$K$bF1MM$N%3%^%s%I$,B8:_$7$^$9$7!" 6K:BI8$G$NF07Br, G^2pJQ?t t, u, v $K$bB8:_$7$^$9!#

=q<0:

```
set xrange [{{<min>}:{<max>}}] {{no}reverse} {{no}writeback} {{no}extend}
           | restore
show xrange
```

$3$3$G <min> $H <max> $ODj?t!"?t<0!"$^$?$O '*' $G!"'*' $O<+F0=L<\5!G=$r0UL#$7$^$9!#F|;~%G!<%?$N>l9g!"HO0O$O **set timefmt** $N=q<0$K=>$C$?J8;zNs$r0zMQId$G0O$'I,MW$,$"$j$^$9!#<min> $d <max> $r>JN,$7$?>l9g$O!"8=:_$NCM$rJQ99$7$^$;$s!#<+F0=L<\5!G=$K4X$9$k>\:Y$O2<$K=R$Y$^$9!#0J2<$b;2>H: **noextend (p. 114)**!#

**yrange**, **zrange**, **x2range**, **y2range**, **cbrange**, **rrange**, **trange**, **urange**, **vrange** $OF1$8=q<0$r;HMQ$7$^$9!#

x $H x2 <4!"$"$k$$$O y $H y2 <4$NHO0O$r%j%s%/$9$k%*%W%7%g%s$K$D$$$F$O0J2<;2>H: **set link (p. 144)**!#

%*%W%7%g%s **reverse** $O!"<+F0=L<\$N<4$NJ}8~$r5U$K$7$^$9!#Nc$($P!"%G!<%?CM$NHO0O$, 10 $+$i 100 $G$"$k$H$-!"$3$1$O!"set xrange [100:10] $H$7$?$N$HF1$8$h$&$K<+F0=L<\$7$^$9!#**reverse** $O!"<+F0=L<\$G$O$J$$<4$KBP$7$F$O5!G=$7$^$;$s!#Cm0U: $3$NJQ99$O!"%P!<%8%g%s 4.7 $GF3F~$5$l$^$7$?!#

<+F0=L<\5!G=: <min> (F1MM$N$3$H$, <max> $K$bE,MQ$5$1$^$9) $,%"%9%?%j%9%/ "*" $N>l9g$O<+F0=L<\5!G= $,%*%s$K$J$j$^$9!#$=$N>l9g$N$=$NCM$K!"2<8B <lb> !"$^$?$O>e8B <ub> !"$^$?$O$=$NN>J}$N@)8B$rM?$($i$1$^$9!#=q<0$O0J2<$NDL$j$G$9!#

```
{ <lb> < } * { < <ub> }
```

Nc$($P

```
0 < * < 200
```

$O <lb> = 0, <ub> = 200 $H$J$j$^$9!#$=$N$h$&$J@_Dj$G$O!"<min> $O<+F0=L<\$5$1$^$9$,!"$=$N:G=*E*$J CM$O 0 $+$i 200 $N4V$K$J$j$^$9 (5-9f$O'<' $G$9$,N>C<$NCM$b4^$_$^$9)!#2<8B$+>e8B$r;XDj$7$J$$>l9g$O!"$=$N'<' $b>JN,$G$-$^$9!#<ub> $, <lb> $h$j>.$5$$>l9g$O!"@)8B$O%*%U$K$J$j!"40A4$J<+F0=L<\$K$J$j$^$9!# $3$N5!G=$O!"<+F0=L<\$@$1$1$I$bHO0O$K@)8B$,$"$kB,Dj%G!<%?$NIA2h$d!"30$1CM$N%/%j%C%T%s%0!"$^$?$O%G!<%?$,$=$1$[$I$NHO0O$rI,MW$H$7$F$$$J$/$F$b:G>.$NIA2hHO0O$rJ]>Z$9$k$N$KM-MQ$G$7$g$&!#

%*%W%7%g%s **writeback** $O!"**set xrange** $G@j$a$i$1$F$$$k%P%C%U%!$NCf$K<+F0=L<\5!G=$K$h$j:n$i$1$?HO0O$r J]B8$7$^$9!#$3$1$O!"$$/$D$+$N4X?t$rF1;~$KI=<($7!"$7$+$7$=$NHO0O$O$=$N$&$A$N$$/$D$+$N$b$N$+$i7hDj $5$;$?$$>l9g$KJXMx$G$9!#**writeback** $N:nMQ$O!"**plot** $N<B9TCf$K5!G=$9$k$N$G!"$=$N%3%^%s%I$NA0$K;XDj$9 $kI,MW$,$"$j$^$9!#:G8e$KJ]B8$7$??eJ?J}8~$NHO0O$O **set xrange restore** $GI|85$G$-$^$9!#Nc$r>e$2$^$9!#

```
set xrange [-10:10]
set yrange [] writeback
plot sin(x)
set yrange restore
replot x/2
```

$3$N>l9g!"y $NHO0O (yrange) $O sin(x) $NCM0h$H$7$F:n$i$1$? [-1:1] $NJ}$K$J$j!"x/2 $NCM0h [-5:5] $OL5;k$5$1$^$9!#>e5-$N$=$1$>$1$N%3%^%s%I$N8e$K **show yrange** $r<B9T$9$1$P!">e$G2?$,9T$J$o$1$F$$$k$+$rM}2r$9$k=u$1$K$J$k$G$7$g$&!#

2 <!85IA2h$K$*$$$F!"**xrange** $H **yrange** $O<4$NHO0O$r7hDj$7!"**trange** $O!"G^2pJQ?t%b!<%I$NG^2pJQ?t$NHO0O!"$"$k$$$O6K:BI8%b!<%I$N3QEY$NHO0O$r7hDj$7$^$9!#F1MM$K 3 <!85G^2pJQ?t%b!<%I$G$O!"**xrange**, **yrange**, **zrange** $,<4$NHO0O$r4IM}$7!"**urange** $H **yrange** $,G^2pJQ?t$NHO0O$r4IM}$7$^$9!#

6K:BI8%b!<%I$G$O!"**rrange** $OIA2h$5$l$kF07B$NHO0O$r7hDj$7$^$9!#<rmin> $OF07B$X$NDI2C$NDj?t$H$7$F:n MQ$7!"0lJ} <rmax> $OF07B$r@Z$j<N$F$k (clip) $h$&$K:nMQ$7!"<rmax> $r1[$($?F07B$KBP$9$kE@$OIA2h$5$l$^$;$s!#**xrange** $H **yrange** $O1F6A$5$1$^$9!#$3$1$i$NHO0O$O!"%0%i%U$, r(t)-rmin $N%0%i%U$G!"L\@9$j$N8+ =P$7$K$O$=$1$>$l rmin $r2C$($?$h$&$J$b$N$G$"$k$+$N$h$&$K%;%C%H$5$1$^$9!#

A4$F$NHO0O$OItJ,E*$K!"$^$?$OA4BNE*$K<+F0=L<\$5$1$^$9$,!"%G!<%?$NIA2h$G$J$1$1$P!"%Q%i%a!<%?JQ?t$N<+F0=L<\5!G=$O0UL#$,$J$$$G$7$g$&!#

HO0O$O **plot** $N%3%^%s%I%i%$%s>e$G$b; XD j$G$-$^$9! #%3%^%s%I%i%$%s>e$GM?$ ($i$1$?HO0O$OC1$K$=$N **plot** %3%^%s%I$G$@$1; H$o$1! "**set** %3%^%s%I$G@_Dj$5$1$?HO0O$O$=$N8e$NIA2h$G! "%3%^%s%I%i%$%s$GHO0O$r; XD j$7$F$$$J$$$b$NA4$F$G; H$o$1$^$9! #$3$1$O **splot** $bF1$8$G$9! #

Nc:

x $NHO0O$r%G%U%)%k%H$NCM$K$7$^$9:

```
set xrange [-10:10]
```

y $NHO0O$,2<J}$XA}2C$9$k$h$&$K$7$^$9:

```
set yrange [10:-10]
```

z $N:G>.CM$K$O1F6A$rM?$($:$K (<+F0=L<\$5$1$?$^$^) ! ":GBgCM$N$_10 $K@_Dj$7$^$9:

```
set zrange [:10]
```

x $N:G>.CM$O<+F0=L<\$H$7! ":GBgCM$OJQ99$7$^$;$s:

```
set xrange [*:]
```

x $N:G>.CM$r<+F0=L<\$H$7$^$9$,! "$=$N:G>.CM$O 0 0J>e$K$7$^$9! #

```
set xrange [0<*:]
```

x $NHO0O$r<+F0=L<\$H$7$^$9$,! ">.$5$/$F$b 10 $+$i 50 $NHO0O$rJ]; }$7$^$9 (<B:]$O$=$1$h$jBg$-$/$J$k$G$7$g$&):

```
set xrange [*<10:50<*]
```

<+F0=L<\$G:GBgHO0O$r -1000 $+$i 1000 ! "$9$J$o$A [-1000:1000] Fb$G<+F0=L<\$7$^$9:

```
set xrange [-1000<*:*<1000]
```

x $N:G>.CM$r -200 $+$i 100 $N4V$N$I$3$+$K$7$^$9:

```
set xrange [-200<*<100:]
```

## <4<gL\@9$j; XD j (xtics)

x <4$N (8+=P$7$N$D$/) BgL\@9$j$O %3%^%s%I **set xtics** $G@)8f$G$-$^$9! #L\@9$j$O **unset xtics** $G>C$ (! "**set xtics** $G (%G%U%)%k%H$N>uBV$N) L\@9$j$,$D$-$^$9! #y,z,x2,y2 <4$NBgL\@9$j$N@)8f$r9T$J$&F1MM$N%3%^%s%I$,$"$j$^$9! #

=q<0:

```
set xtics {axis | border} {{no}mirror}
          {in | out} {scale {default | <major> {,<minor>}}}
          {{no}rotate {by <ang>}} {offset <offset> | nooffset}
          {left | right | center | autojustify}
          {add}
          {  autofreq
           | <incr>
           | <start>, <incr> {,<end>}
           | ({"<label>"} <pos> {<level>} {,{"<label>"}...) }
          {format "formatstring"} {font "name{,<size>}"} {{no}enhanced}
          { numeric | timedate | geographic }
          {{no}logscale}
          { rangelimited }
          { textcolor <colorspec> }
unset xtics
show xtics
```

F1$8=q<0$, **ytics**, **ztics**, **x2tics**, **y2tics**, **cbtics** $K$bE,MQ$5$1$^$9! #

**axis** $H **border** $O **gnuplot** $KL\@9$j (L\@9$j$N9o$_<+?H$H$=$N8+=P$7) $r! "$=$1$>$1<4$K$D$1$k$N$+! "6-3&$K$D$1$k$N$+$r; X< ($7$^$9! #<4$,6-3&$K$H$F$b6a$$>19g! "**axis** $r; HMQ$9$k$HL\@9$j$N8+=P$7J8; z$r6-3&$N30$K

=P$7$F$7$^$&$G$7$g$&! #$3$N>l9g<+F0E*$J%l%$%"%&%H%"%k%4%j%:%`$K$h$kM>Gr@_Dj$OBgDq$h$/$J$$$b$N$H$J$C$F$7$^$$$^$9! #

**mirror** $O **gnuplot** $KH?BPB&$N6-3&$NF1$80LCV$K! "8+=P$7$N$J$$L\@9$j$r=PNO$9$k$h$&;X<($7$^$9! #**nomirror** $O! "$"$J$?$,A[A|$7$F$$$kDL$j$N$3$H$r9T$J$$$^$9! #

**in** $H **out** $OL\@9$j$N9o$_$rFbB&$KIA$/$+30B&$KIA$/$+$r@Z$jJQ$($^$9! #

L\@9$j$N9o$_$N%5%$%:$O **scale** $GD4@0$G$-$^$9! #<minor> $N;XDj$,>JN,$5$l$?>l9g$O! "$=$l$O 0.5*<major> $K$J$j$^$9! #%G%U%)%k%H$N%5%$%:$O! "BgL\@9$j$, 1.0 $G>.L\@9$j$, 0.5 $G! "$3$l$O **scale default** $G8F$S$@$;$^$9! #

**rotate** $O! "J8;zNs$r 90 EY2sE>$5$;$F=PNO$5$;$h$&$H$7$^$9! #$3$l$O! "J8;zNs$N2sE>$r%5%]!<%H$7$F$$$k=PNO%I%i%$%P (terminal) $G$O<B9T$5$l$^$9! #**norotate** $O$3$l$r%-%c%s%;%k$7$^$9! #**rotate by <ang>** $O3QEY <ang> $N2sE>$r9T$J$$$^$9$,! "$3$l$O$$$/$D$+$N=PNO7A<0 (terminal) $G%5%]!<%H$5$l$F$$$^$9! #

x $H y <4$NBgL\@9$j$N%G%U%)%k%H$O **border mirror norotate** $G! "x2, y2 <4$O **border nomirror norotate** $,%G%U%)%k%H$G$9! #z <4$K$O! "**{axis | border}** %*%W%7%g%s$OL58z$G! "%G%U%)%k%H$O **nomirror** $G$9! #z <4$N L\@9$j$r%_%i!<2=$7$?$$$J$i! "B?J, **set border** $G$=$N$?$a$N6u4V$r$"$1$kI,MW$,$"$k$G$7$g$&! #

<offset> $O x,y $+$^$?$O x,y,z $N7A<0$G;XDj$7$^$9$,! "$=$l$K:BI87O$rA*Br$7$F! "$=$NA0$K **first**, **second**, **graph**, **screen**, **character** $N$$$:$l$+$r$D$1$k$3$H$b$G$-$^$9! #<offset> $O9o$_J8;z$N%G%U%)%k%H$N0LCV$+$i$N$:$l$rI=$7! "%G%U%)%k%H$N:BI87O$O **character** $G$9! #>\:Y$O! "0J2<;2>H: **coordinates (p. 26)**! #**nooffset** $O$:$i$7$rL58z$K$7$^$9! #

Nc:

xtics $r$h$jIA2h$K6a$E$1$k:

```
set xtics offset 0,graph 0.05
```

%G%U%)%k%H$G$O8+=P$7%i%Y%k$O! "H~$7$$7k2L$r@8$`$h$&$K! "<4$H2sE>3Q$K0MB8$7$?0LCV$K<+F0E*$KB7$($i$l$^$9$,! "5$$K$$$i$J$1$l$P! "L@<(E*$K **left**, **right**, **center** $N%-!<%o!<%I$K$h$j0LCVB7$($rJQ99$G$-$^$9! #**autojustify** $G%G%U%)%k%H$N5sF0$KI|5"$7$^$9! #

%*%W%7%g%s$J$7$G **set xtics** $r<B9T$9$k$H! "L\@9$j$,I=<($5$l$k>uBV$G$"$l$P! "$=$l$O%G%U%)%k%H$N6-3&! "$^$?$O<4$rI|85$7! "$=$&$G$J$1$l$P2?$b$7$^$;$s! #$=$NA0$K;XDj$7$?L\@9$j$N4V3V! "0LCV ($H8+=P$7) $OJ];}$5$l$^$9! #

L\@9$j$N0LCV$O! "%G%U%)%k%H! "$^$?$O%*%W%7%g%s **autofreq** $,;XDj$5$l$F$$$l$P<+F0E*$K7W;;$5$l$^$9! #

L\@9$j$N0LCV$NNs$O! "L\@9$j$N4V3V$N$_! "$^$?$O3+;O0LCV$H4V3V$H=*$j$N0LCV! "$N$$$:$l$+$r;XDj$9$k$3$H$,$G$-$^$9 (0J2<;2>H: **xtics series (p. 188)**)! #

L@<(E*$J0LCV$N%j%9%H$rM?$($k$3$H$G! "8D! 9$NL\@9$j$N0LCV$r8DJL$K;XDj$9$k$3$H$b$G$-$^$9! #3F0LCV$K$O! "$=$l$KBP$9$k8+=P$7%i%Y%k$r;XDj$9$k$3$H$b$G$-$^$9! #0J2<;2>H: **xtics list (p. 189)**! #

$7$+$7;XDj$7$F$b! "I=<($5$l$k$N$O$"$/$^$GIA2hHO0O$N$b$N$@$1$G$9! #

L\@9$j$N8+=P$7$N=q<0 ($^$?$O>JN,) $O **set format** $G@)8f$5$l$^$9! #$?$@$7$=$l$O **set xtics (<label>)** $N7A<0$NL@<(E*$J8+=P$7J8;zNs$,4^$^$l$F$$$J$$>l9g$@$1$G$9! #

(8+=P$7IU$1$5$l$J$$) >.L\@9$j$O! "**set mxtics** %3%^%s%I$G<+F0E*$KDI2C$9$k$+! "$^$?$O0LCV$r<jF0$G **set xtics ("" <pos> 1, ...)** $N7A<0$GM?$($k$3$H$b$G$-$^$9! #

9o$_$N8+$?L\(@~<o! "I}Ey) $O! "$=$l$r<4$N>e$KIA$/>l9g$G$"$C$F$b! "6-3&@~$K$h$C$F7hDj$5$l$^$9 (0J2<;2>H: **set border (p. 115)**)! #

### Xtics series

=q<0:

```
set xtics <incr>
set xtics <start>, <incr>, <end>
```

0E<(E*$J <start>, <incr>, <end> 7A<0$O! "L\@9$j$NNs$r <start> $+$i <end> $N4V$r <incr> $N4V3V$GI=<($7$^$9! #<end> $r;XDj$7$J$1$l$P! "$=$l$OL58BBg$H$_$J$5$l$^$9! #<incr> $OI i$NCM$b2DG=$G$9! #<start> $H <end> $NN>J}$,;XDj$5$l$F$$$J$$>l9g! "<start> $O -! g! "<end> $O +! g$H$_$J$5$l! "L\@9$j$O <incr> $N@0?tG\$N0LCV$KI=<($5$l$^$9! #<4$,BP?t<4$N>l9g! "L\@9$j$N4V3V (A}J,) $O! "G\?t$H$7$F;HMQ$5$l$^$9! #

Ii$N <start> $d <incr> $r! "?tCM$N8e$m$K; XD j$ 9$ k$H (Nc$ ($P **rotate by <angle>** $H$+ **offset <offset>** $N8e$m) ! "gnuplot $N9=J82 r@O4 o$O! "$=$NCM$+$ i$=$NI i$N <start> $d <incr> $NCM$N0 z$-; ;$ r9T$ *$ &$H$ 9$ k4V 0 c$ $$ rHH$ 7$ ^$ 9! #$ 3$ 1$ r2 sHr$ 9$ k$K$O! "$=$N$h$ &$J> 19 g$O! "**0-<start>** $d **0-<incr>** $N$h$ &$K; XD j$ 7$F$ /$@ $ 5$ $! #

Nc:

```
     set xtics border offset 0,0.5 -5,1,5
```

:G8e$N ',' $N$H$ 3$m$G< :GT$ 7$ ^$ 9! #

```
     set xtics border offset 0,0.5 0-5,1,5
```

$+

```
     set xtics offset 0,0.5 border -5,1,5
```

$J$ i$P! "$A$ c$ s$H; X< (DL$ j$K! "L\@ 9$ j$ r6-3 &$K! "L\@ 9$ j8 +=P$ 7J8; zNs$ r 0,0.5 J8; zJ ,$ @$ 1$ :$ i$ 7$F! "start, increment, end $ r$=$ 1$>$ 1 -5,1,5 $K@_D j$ 7$ ^$ 9! #

**set grid** $N% *%W% 7% g% s 'front', 'back', 'layerdefault' $b! "x <4$NL\@ 9$ j$NI A2 h$N=g=x$K1 F6A$ 7$ ^$ 9! #

Nc:

L\@ 9$ j$ r 0, 0.5, 1, 1.5, ..., 9.5, 10 $N0 LCV$K@ 8@ .

```
     set xtics 0,.5,10
```

L\@ 9$ j$ r ..., -10, -5, 0, 5, 10, ... $K@ 8@ .

```
     set xtics 5
```

L\@ 9$ j$ r 1, 100, 1e4, 1e6, 1e8 $K@ 8@ .

```
     set logscale x; set xtics 1,100,1e8
```

### Xtics list

=q< 0:

```
    set xtics {add} ("label1" <pos1> <level1>, "label2" <pos2> <level2>, ...)
```

L@< (E *$ J ("label" <pos> <level>, ...) $N7 A< 0$O! "G$0 U$NL\@ 9$ j$N0 LCV! "$ "$ k$ $$O?t; z$G$ J$ $8 +=P$ 7$N@ 8@ .$b 2 DG=$K$ 7$ ^$ 9! #$ 3$N7 A< 0$ G$O! "L\@ 9$ j$O0 LCV$N?t; z$N=g$KM?$ ($kI ,MW$O$ "$ j$ ^$ ;$ s! #3 FL\@ 9$ j$O0 LCV (pos) $H 8 +=P$ 7 (label) $ r; }$A$ ^$ 9$ ,! "8 +=P$ 7$OI ,?\$G$O$ "$ j$ ^$ ;$ s! #

8 +=P$ 7$O0 zMQI d$G0 O$ s$ @J8; zNs$ +! "$ ^$ ?$ OJ8; zNsCM$N?t< 0$ G$ 9! #$=$ 1$K$O! ""%3f clients" $N$h$ &$K$=$N0 LCV$ r ?t; z$KJQ4 9$ 9$ k=q< 0J8; zNs$ rF ~$ 1$F$b9=$ $$ ^$ ;$ s$ 7! "6 uJ8; zNs "" $G$b9=$ $$ ^$ ;$ s! #$h$ j> \$ 7$ $>pJ s$K$D$ $$F $O! "0 J2 <; 2>H: **set format (p. 131)** ! #$b$ 7! "J8; zNs$ r; XD j$ 7$ J$ 1$ 1$P! "%G%U% )%k%H$N?t; z$N8 +=P$ 7$ r; HMQ$ 7 $ ^$ 9! #

L@< (E *$ J7 A< 0$ G$O 3 $DL\$N%Q% i% a! <% ?$H$ 7$F% 1% Y% k$ r; XD j$ G$-$ ^$ 9! #%G%U% )%k%H$N% 1% Y% k$O 0 $G! "$ 3$ 1$OBgL\ @ 9$ j$ r0 UL#$ 7! "% 1% Y% k 1 $N> 19 g$O> .L\@ 9$ j$ r@ 8@ .$ 7$ ^$ 9! #% i% Y% k$O! "> .L\@ 9$ j$K$O7 h$ 7$FI U$-$ ^$ ;$ s! #BgL\@ 9 $ j$H> .L\@ 9$ j$O gnuplot $ ,<+F0E *$K@ 8@ .$ 7$ ^$ 9$ ,! "% f! <% 6$ ,L@< (E *$K; XD j$b$G$-$ ^$ 9! #% 1% Y% k$ , 2 0 J> e$NL\@ 9 $ j$O! "% f! <% 6$ ,L@< (E *$K; XD j$ 7$ J$ 1$ 1$P$ J$ i$ :! "<+F0@ 8@ .$NL\@ 9$ j$h$ j$b9b$ $M%@hEY$ r; }$A$ ^$ 9! #3 F% 1% Y% k$N L\@ 9$ j$N9 o$_$NBg$-$ 5$O! "**set tics scale** $G@ )8 f$ 7$ ^$ 9! #

Nc:

```
     set xtics ("low" 0, "medium" 50, "high" 100)
     set xtics (1,2,4,8,16,32,64,128,256,512,1024)
     set ytics ("bottom" 0, "" 10, "top" 20)
     set ytics ("bottom" 0, "" 10 1, "top" 20)
```

2 HVL\$NNc$G$O! "A4$F$NL\@ 9$ j$ ,8 +=P$ 7I U$ 1$ 5$ 1$ ^$ 9! #3 HVL\$NNc$G$O! "C<$N$b$N$ @$ 1$ ,8 +=P$ 7I U$ 1$ 5$ 1$ ^$ 9! # 4 HVL\$NNc$N! "8 +=P$ 7$N$ J$ $L\@ 9$ j$O> .L\@ 9$ j$K$ J$ j$ ^$ 9! #

DL> oL@< (E *$ J (< jF 0$N) L\@ 9$ j0 LCV$ ,M?$ ($ i$ 1$ ?> 19 g! "<+F0E *$K@ 8@ .$ 5$ 1$ kL\@ 9$ j$O; H$ o$ 1$ ^$ ;$ s! #5 U$K! "**set xtics auto** $N$h$ &$ J$b$N$ ,; XD j$ 5$ 1$ ?> 19 g$O! "0 JA 0$K< jF 0$ G@_D j$ 7$ ?L\@ 9$ j$O> C$ 5$ 1$F$ 7$ ^$ 7$ ^$ 9! #$ 3$N< jF 0 $NL\@ 9$ j$H<+F0E *$ JL\@ 9$ j$ r6 &B 8$ 5$ ;$ k$K$O% -! <% o! <% I **add** $ r; HMQ$ 7$F$ /$ @$ 5$ $! #$ 3$ 1$OD I2 C$ 9$ kL\@ 9$ j$N % 9% ?% $% k$NA 0$K=q$ +$ J$ 1$ 1$P$ $$ 1$ ^$ ;$ s! #

Nc:

```
set xtics 0,.5,10
set xtics add ("Pi" 3.14159)
```

$3$l$O<+F0E*$KL\@9$j$N9o$_$r x <4$K 0.5 4V3V$G$D$1$^$9$,!"&P$N$H$3$m$KL@<(E*$J8+=P$7$bDI2C$7$^$9!#

### Xtics timedata

;~4V$HF|IU$OFbIt$G$OIC?t$H$7$FJ];}$5$l$F$$$^$9!#

F~NO: Hs?tCM$NF|;~CM$O!"F~NO;~$K **timefmt** $G;XDj$7$?=q<0$rMQ$$$FIC?t$KJQ49$7$^$9!#<4$KBP$9$k0LCV$d<4$NHO0O$b **timefmt** $G2r<a$5$l$kF|;~$G!"0zMQId$G0O$s$GM?$($^$9!#<start>, <incr>, <end> 7A<0$r;H$&>l9g!"<incr> $OIC10L$GM?$($J$1$l$P$$$1$^$;$s!#F~NO%G!<%?$N2r<a$K$O **timefmt** $r;H$C$F$/$@$5$$!#<4$NHO0O$HL\@9$j$N0LCV$O!"**set xdata time** $GJQ99$5$l$^$9!#

=PNO: <4$NL\@9$j%i%Y%k$O!"**set format** $+ **set xtics format** $N$$:$l$+$G;XDj$5$l$?!"JL$N=q<0$r;H$C$F@8@.$7$^$9!#%G%U%)%k%H$G$O!"$=$l$ODL>o$N?tCM=q<0;XDj$G$"$k$HG'<1$7$^$9$, (**set xtics numeric**)!"B>$K!"COM}:BI8 (**set xtics geographic**) $d!"F|;~%G!<%? (**set xtics time**) $N%*%W%7%g%s$,$"$j$^$9!#

Cm0U: 0JA0$NHG$N gnuplot $H$N8_49@-$N$?$a!"%3%^%s%I **set xdata time** $b0EL[$K **set xtics time** $r<B9T$7$^$9$7!"**set xdata** $d **unset xdata** $O0EL[$K **set xtics numeric** $X%j%;%C%H$7$^$9!#$7$+$7!"$3$l$O$=$N8e$K **set xtics** $r8F$S=P$9$3$H$GJQ99$G$-$^$9!#

Nc:

```
set xdata time            # F~NO%G!<%?$N2r<a$N@)8f
set timefmt "%d/%m"       # F~NO%G!<%?$NFI$_9~$_$N=q<0
set xtics timedate        # =PNO=q<0$N2r<a$N@)8f
set xtics format "%b %d"  # L\@9$j%i%Y%k$G;H$&=q<0
set xrange ["01/12":"06/12"]
set xtics "01/12", 172800, "05/12"

set xdata time
set timefmt "%d/%m"
set xtics format "%b %d" time
set xrange ["01/12":"06/12"]
set xtics ("01/12", "" "03/12", "05/12")
```

$3$l$i$ON>J}$H$b "Dec 1", "Dec 3", "Dec 5", $NL\@9$j$r@8@.$7$^$9$,!"2HVL\$NNc "Dec 3" $NL\@9$j$O8+=P$7IU$1$5$l$^$;$s!#

### Geographic

**set xtics geographic** $O!"x <4$NCM$,EY$NC10L$NCOM}:BI8$G$"$k$3$H$r0UL#$7$^$9!#$=$N<4$N9o$_$N8+=P$7$NI=8=$N;XDj$K$O!"**set xtics format** $+ **set format x** $r;H$$$^$9!#COM}:BI8%G!<%?$K4X$9$k=q<0;XDj;R$O0J2<$NDL$j:

```
%D                     = EY$N@0?tI=<(
%<width.precision>d    = EY$NIbF0>.?tI=<(
%M                     = J,$N@0?tI=<(
%<width.precision>m    = J,$NIbF0>.?tI=<(
%S                     = IC$N@0?tI=<(
%<width.precision>s    = IC$NIbF0>.?tI=<(
%E                     = +/- $G$J$/ E/W $N%i%Y%k
%N                     = +/- $G$J$/ N/S $N%i%Y%k
```

Nc$($P!"%3%^%s%I **set format x "%Ddeg %5.2mmin %E"** $O!"x :BI8$N-1.51 $H$$$&CM$r" **1deg 30.60min W**" $N$h$&$KI=<($7$^$9!#

xtics $,%G%U%)%k%H$N>uBV$N$^$^ (**set xtics numeric**) $N>l9g$O!":BI8$O10 ?J?t$NEY$GI=<($7!"**format** $b>e$NFCJL$J5-9f$G$O$J$/!"DL>o$N?tCM=q<0$,;H$o$l$F$$$k$H$_$J$5$l$^$9!#

%^%C%W>e$K%i%Y%k$rCV$/$J$I!"<4$NL\@9$j$H$O0[$J$k>l=j$GEY/J,/IC$N=PNO$r$9$k$K$O!"strptime $KA\jBPE*;~4V=q<0;XDj %tH %tM %tS $r;HMQ$G$-$^$9!#0J2<;2>H: **time_specifiers (p. 132)**, **strptime (p. 32)**!#

### Xtics logscale

BP?t<4$K1h$&9o$_$KBP$7$F **logscale** B0@-$r@_Dj$9$k$H!"9o$_$N4V3V$O8x: 9$G$O$J$/!"8xHf$H2r<a$5$1$^$9!#Nc:

```
# y=20 y=200 y=2000 y=20000 $K9o$_Ns$r:n@.
set log y
set ytics 20, 10, 50000 logscale
```

y=50000 $O 2*10^x $N?tNs$K$O4^$^$l$J$$$N$G!"$=$3$K$O9o$_$O$D$+$J$$3$H$KCm0U$7$F$/$@$5$$!#logscale B0@-$,L58z$N>l9g!"<4$NA}J,$O!"$?$H$(BP?t<4$G$"$C$F$b8x: 9$H$7$F07$o$l$^$9!#Nc:

```
# y=20 y=40 y=60 ... y=200 $K9o$_$r:n@.
set log y
set yrange [20:200]
set ytics 20 nologscale
```

**logscale** B0@-$O!"%3%^%s%I **set log** $G<+F0E*$K@_Dj$5$l$k$N$G!"2 $DL\$NNc$N$h$&$J<4$N9o$_4V3V$K6/@)E*$K$7$?$$>l9g$G$J$1$l$P!"DL>o$O$3$N%-!<%o!<%I$OI,MW$"$j$^$;$s!#

### Xtics rangelimited

$3$N%*%W%7%g%s$O!"<+F0E*$K@8@.$5$l$k<4$NL\@9$j$N8+=P$7$H!"IA2h$5$l$?%G!<%?$G<B:]$KM?$($i$l$kHO0O$KBP1~$9$kIA2h6-3&$NN>J}$r@)8B$7$^$9!#$3$l$OIA2h$KBP$9$k8=:_$NHO0O@)8B$H$OL54X78$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#Nc$($P%G!<%?"file.dat" $N%G!<%?$,$9$Y$F 2 < y < 4 $NHO0O$K$"$k$H$9$k$H!"0J2<$N%3%^%s%I$O!":8B&$NIA2h6-3& (y <4) $O y $NHO0OA4BN ([0:10]) $N$3$NItJ, ([2:4]) $N$_$,IA2h$5$l!"$3$NHO0O ([2:4]) $N<4$NL\@9$j$N$_$,:n$i$l$kIA2h$r@8@.$7$^$9!#$D$^$j!"IA2h$O y $NHO0OA4BN ([0:10]) $K3HBg$5$l$^$9$,!":8$N6-3&$O 0 $+$i 2 $N4V!"4 $+$i 10 $N4V$O6uGrNN0h$H$J$j$^$9!#$3$N%9%?%$%k$O!"HO0OOH %0%i%U (range-frame) $H$b8F$P$l$^$9!#

```
set border 3
set yrange [0:10]
set ytics nomirror rangelimited
plot "file.dat"
```

## Xy J?LL0LCV (xyplane)

**set xyplane** %3%^%s%I$O 3D IA2h$GIA$+$l$k xy J?LL$N0LCV$rD4@0$9$k$N$K;H$o$l$^$9!#8eJ}8_49@-$N$?$a$K!""set ticslevel" $bF1$80UL#$N%3%^%s%I$H$7$F;H$&$3$H$,$G$-$^$9!#

=q<0:

```
set xyplane at <zvalue>
set xyplane relative <frac>
set ticslevel <frac>        # set xyplane relative $HF1Ey
show xyplane
```

**set xyplane relative <frac>** $O!"xy J?LL$r Z <4$NHO0O$N$I$3$KCV$/$+$r7hDj$7$^$9!#<frac> $K$O!"xy J?LL$H z $N0lHV2<$N0LCV$H$N:9$N!"z <4$NHO0OA4BN$KBP$9$k3d9g$rM?$($^$9!#%G%U%)%k%H$NCM$O 0.5 $G$9!#I i$NCM$b5v$5$l$F$$$^$9$,!"$=$&$9$k$H 3 $D$N<4$NL\@9$j$N8+=P$7$,=E$J$k2DG=@-$,$"$j$^$9!#

$b$&0l$D$N7A<0$G$"$k **set xyplane at <zvalue>** $O!"8=:_$N z $NHO0O$r5$$K$9$k$3$H$J$/!";XDj$7$? z $NCM$N0LCV$K xy J?LL$r8GDj$7$^$9!#$h$C$F!"x,y,z <4$r6&DL$N86E@$rDL$k$h$&$K$9$k$K$O!"**set xyplane at 0** $H$9$l$P$$$$$3$H$K$J$j$^$9!#

0J2<$b;2>H: **set view (p. 182)**, **set zeroaxis (p. 194)**!#

## Xzeroaxis

%3%^%s%I **set xzeroaxis** $O y = 0 $ND>@~$rIA$-$^$9!#>\:Y$K4X$7$F$O!"0J2<;2>H: **set zeroaxis (p. 194)**!#

## Y2data

%3%^%s%I **set y2data** $O y2 (1&) <4$N%G!<%?$r;~7ONs (F|;~) 7A<0$K@_Dj$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xdata (p. 184)**! #

## Y2dtics

%3%^%s%I **set y2dtics** $O y2 (1&) <4$NL\@9$j$rMKF|$KJQ99$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xdtics (p. 184)**! #

## Y2label

%3%^%s%I **set y2label** $O y2 (1&) <4$N8+=P$7$r@_Dj$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xlabel (p. 185)**! #

## Y2mtics

%3%^%s%I **set y2mtics** $O y2 (1&) <4$NL\@9$j$r 1 G/$N3F7n$KJQ99$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xmtics (p. 185)**! #

## Y2range

%3%^%s%I **set y2range** $O y2 (1&) <4$NI=<($5$l$k?bD>HO0O$r@_Dj$7$^$9! #%3%^%s%I%*%W%7%g%s$N$9$Y$F$N@b L@$K$D$$$F$O! "0J2<; 2>H: **set xrange (p. 186)**! #0J2<$b; 2>H: **set link (p. 144)**! #

## Y2tics

%3%^%s%I **set y2tics** $O y2 (1&) <4$N! "8+=P$7IU$1$5$l$kBgL\@9$j$N@)8f$r9T$J$$$^$9! #>\: Y$O! "0J2<; 2>H: **set xtics (p. 187)**! #

## Y2zeroaxis

%3%^%s%I **set y2zeroaxis** $O! "8 6E@$rDL$k y2 (1&) <4 (x2 = 0) $rIA$-$^$9! #>\: Y$O! "0J2<; 2>H: **set zeroaxis (p. 194)**! #

## Ydata

%3%^%s%I **set ydata** $O y <4$N%G!<%?$r;~7ONs (F|;~) 7A<0$K@_Dj$7$^$9! #0J2<; 2>H: **set xdata (p. 184)**! #

## Ydtics

%3%^%s%I **set ydtics** $O y <4$NL\@9$j$rMKF|$KJQ99$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xdtics (p. 184)**! #

## Ylabel

$3$N%3%^%s%I$O y <4$N8+=P$7$r@_Dj$7$^$9! #0J2<; 2>H: **set xlabel (p. 185)**! #

## Ymtics

%3%^%s%I **set ymtics** $O! "y <4$NL\@9$j$r7n$KJQ99$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xmtics (p. 185)**! #

## Yrange

%3%^%s%I **set yrange** $O!"y J}8~$N?bD>HO0O$r@_Dj$7$^$9!#>\:Y$O!"0J2<;2>H: **set xrange (p. 186)**!#

## Ytics

%3%^%s%I **set ytics** $O y <4$N (8+=P$7IU$1$5$l$k) BgL\@9$j$r@)8f$7$^$9!#>\:Y$O!"0J2<;2>H: **set xtics (p. 187)**!#

## Yzeroaxis

%3%^%s%I **set yzeroaxis** $O x = 0 $ND>@~ (y <4) $r=q$-$^$9!#>\:Y$O!"0J2<;2>H: **set zeroaxis (p. 194)**!#

## Zdata

%3%^%s%I **set zdata** $O z <4$N%G!<%?$r;~7ONs (F|;~) 7A<0$K@_Dj$7$^$9!#0J2<;2>H: **set xdata (p. 184)**!#

## Zdtics

%3%^%s%I **set zdtics** $O z <4$NL\@9$j$rMKF|$KJQ99$7$^$9!#>\:Y$O!"0J2<;2>H: **set xdtics (p. 184)**!#

## Zzeroaxis

%3%^%s%I **set zzeroaxis** $O (x=0,y=0) $rDL$kD>@~$rIA$-$^$9!#$3$l$O!"2D IA2h!"$*$h$S **set view map** $G $N splot $G$O8zNO$r;}$A$^$;$s!#>\:Y$O!"0J2<;2>H: **set zeroaxis (p. 194)**, **set xyplane (p. 191)**!#

## Cbdata

$3$N%3%^%s%I$O%+%i!<%\%C%/%9<4$N%G!<%?$r;~7ONs (F|;~) 7A<0$K<0$K@_Dj$7$^$9!#0J2<;2>H: **set xdata (p. 184)**!#

## Cbdtics

%3%^%s%I **cbdtics** $O%+%i!<%\%C%/%9<4$NL\@9$j$N9o$_$rMKF|$KJQ49$7$^$9!#>\:Y$O!"0J2<;2>H: **set xdtics (p. 184)**!#

## %<%mogCM (zero)

**zero** $NCM$O!"0.0 $K6a$$%G%U%)%k%H$NogCM$rI=$7$^$9!#

=q<0:

```
set zero <expression>
show zero
```

**gnuplot** $O!"(J#AG?tCM$r;}$DE@$NIA2h$K$*$$$F$O) $=$NCM$N5u?tItJ,$N@dBPCM$, **zero** ogCM$h$jBg$-$$>l9g ($D$^$j<B?t$G$J$$CM$r;}$DE@) $O!"$=$NE@$rIA2h$7$^$;$s!#$3$NogCM$O **gnuplot** $NB>$NMM!9$JItJ,$K$*$$$F$=$N(Bg$^$+$J) ?tCM8m:9$NogCM$H$7$F$b;H$o$l$F$$$^$9!#%G%U%)%k%H$N **zero** $NCM$O 1e-8 $G$9!#1e-3 (= E57?E*$J%S%C%H%^%C%W%G%#%9%W%l%$$N2rA|EY$N5U?t) $h$jBg$-$$ **zero** $NCM$O@_Dj$9$Y$-$G$O$J$$$G$7$g$&$,!"**zero** $r 0.0 $H@_Dj$9$k$N$OOUL#$N$J$$$3$H$G$O$"$j$^$;$s!#

### %<%m<4 (zeroaxis)

x <4$O **set xzeroaxis** $K$h$C$FIA$+$1! "**unset xzeroaxis** $K$h$C$F:o=|$5$1$^$9! #F1MM$N y, x2, y2, z <4MQ$N %3%^%s%I$,F1MM$NF/$-$r$7$^$9! #**set zeroaxis ...** (A0CV; 1$J$7) $O! "x, y, z <4$9$Y$F$K5 !G=$7$^$9! #

=q<0:

```
set {x|x2|y|y2|z}zeroaxis { {linestyle | ls <line_style>}
                          | {linetype | lt <line_type>}
                            {linewidth | lw <line_width>}
                            {linecolor | lc <colorspec>}
                            {dashtype | dt <dashtype>} }
unset {x|x2|y|y2|z}zeroaxis
show {x|y|z}zeroaxis
```

%G%U%)%k%H$G$O! "$3$1$i$N%*%W%7%g%s$O%*%U$K$J$C$F$$$^$9! #A*Br$5$1$? 0 $N<4$O <line_type> $N@~$N7?! " <line_width> $N@~$NI }! "<colorspec> $N?'! "<dashtype> $NE@@~/GK@~%Q%?! <%s$G ($$$:$1$b8=:_; HMQ$7$F$$ $k=PNO7A<0$,%5%]! <%H$7$F$$$1$P)! "$"$k$$$O$"$i$+$8$aDj5A$5$1$? <line_style> $N%9%?%$%k$GIA$+$1$^$9! # 0J2<; 2>H: **set style line (p. 174)**! #

@~$N7?$r; XDj$7$J$1$1$P! "<4$ODL>o$N<4$N@~$N7? (7?0) $GIA$+$1$^$9! #

Nc:

y=0 $N<4$r8+$ ($k$h$&$K4JC1$K=q$/>19g:

```
set xzeroaxis
```

B@$$@~$K$7$F! "0c$C$??'! "$^$?$OE@@~%Q%?! <%s$K$7$?$$>19g:

```
set xzeroaxis linetype 3 linewidth 2.5
```

## Zlabel

$3$N%3%^%s%I$O z <4$N8+=P$7$r@_Dj$7$^$9! #0J2<; 2>H: **set xlabel (p. 185)**! #

## Zmtics

%3%^%s%I **set zmtics** $O z <4$NL\@9$j$r7n$KJQ99$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xmtics (p. 185)**! #

## Zrange

%3%^%s%I **set zrange** $O z <4J}8~$KI=<($5$1$kHO0O$r@_Dj$7$^$9! #$3$N%3%^%s%I$O **splot** $K$N$_M-8z$G! "**plot** $G$OL5; k$5$1$^$9! #>\: Y$O! "0J2<; 2>H: **set xrange (p. 186)**! #

## Ztics

%3%^%s%I **set ztics** $O z <4$N (8+=P$7IU$1$5$1$k) BgL\@9$j$r@)8f$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xtics (p. 187)**! #

## Cblabel

$3$N%3%^%s%I$O%+%i! <%\%C%/%9<4$N8+=P$7$r@_Dj$7$^$9! #0J2<; 2>H:**set xlabel (p. 185)**! #

## Cbmtics

%3%^%s%I **set cbmtics** $O%+%i! <%\%C%/%9<4$NL\@9$j$N8+=P$7$r7n$KJQ49$7$^$9! #>\: Y$O! "0J2<; 2>H: **set xmtics (p. 185)**! #

## Cbrange

%3%^%s%I **set cbrange** $O! "%9%?%$%k **with pm3d**, **with image** $d **with palette** $J$I$K$h$C$F8=:_$N%Q%l%C%H (**palette**) $r;H$C$F?'IU$1$5$1$kCM$NHO0O$r@_Dj$7$^$9! #$=$NHO0O3 0$NCM$KBP$7$F$O! ": G$b6a$$8B3&$NCM$N?'$,;HMQ$5$1$^$9! #

%+%i!<%\%C%/%9<4 (cb-<4) $, **splot** $G<+F0=L<\$5$1$F$$$k>l9g$O! "$=$N%+%i!<%\%C%/%9$NHO0O$O **zrange** $,;H$o$1$^$9! #**splot ... pm3d|palette** $GIA2h$5$1$kE@$O! "0 [$J$k **zrange** $H **cbrange** $r;H$&$3$H$G%U%#%k%?%j%s%0$G$-$^$9! #

**set cbrange** $N=q<0$K4X$9$k>\:Y$O! "0J2<;2>H: **set xrange (p. 186)**! #0J2<$b;2>H: **set palette (p. 161)**, **set colorbox (p. 121)**! #

## Cbtics

%3%^%s%I **set cbtics** $O%+%i!<%\%C%/%9<4$N (8+=P$7IU$1$5$1$k) BgL\@9$j$r@)8f$7$^$9! #>\:Y$O! "0J2<;2>H: **set xtics (p. 187)**! #

# %7%'%k%3%^%s%I (shell)

**shell** %3%^%s%I$OBPOCE*$J%7%'%k$r5/F0$7$^$9! #**gnuplot** $KLa$k$K$O! "VMS $G$O **logout** $r! "Unix $J$i$P **exit** $b$7$/$O END-OF-FILE J8;z$r! "MS-DOS $+ OS/2 $J$i$P **exit** $rF~NO$7$F2<$5$$! #

%3%^%s%I **shell** $O! "$=$10J3 0$N gnuplot %3%^%s%I%i%$%s>e$N$b$N$r$9$Y$FL5;k$7$^$9! #$=$&$G$J$/! "%7%'%k$KD>$A$K%3%^%s%IJ8;zNs$rEO$7$?$$>l9g$O! "4X?t **system** $+! "%7%g!<%H%+%C%H **!** $r;HMQ$7$F$/$@$5$$! #0J2<;2>H: **system (p. 201)**! #

Nc:

```
shell
system "print previous_plot.ps"
! print previous_plot.ps
current_time = system("date")
```

# Splot

**splot** $O3 <!85IA2h$N$?$a$N%3%^%s%I$G$9 ($b$A$m$s$4B8CN$G$7$g$&$,! "<B: ]$K$O$=$N2 <!85$X$N<M1F)! #$=$1$O! "**plot** %3%^%s%I$N3 <!85HG$G$9! #**splot** $O! "$=$1$>$1C10l$N x, y, z <4$rDs6!$9$k$@$1$G! "**plot** $GMQ0U$5$1$F$$$kBh2 <4 x2, y2 $N$h$&$J$b$N$O$"$j$^$;$s! #

2 <!85$H3 <!85IA2h$NN>J}$G;H$($kB?$/$N%*%W%7%g%s$K$D$$$F$O! "0J2<;2>H: **plot (p. 86)**! #

=q<0:

```
splot {<ranges>}
      {<iteration>}
      <function> | {{<file name> | <datablock name>}
                     {datafile-modifiers}}
      {<title-spec>} {with <style>}
      {, {definitions{,}} <function> ...}
```

%3%^%s%I **splot** $O! "4X?t$+$i@8@.$5$1$?%G!<%?! "$^$?$O%G!<%?%U%!%$%k$+$iFI$_9~$s$@%G!<%?! "$^$?$O;vA0$KJ]B8$5$1$?L>A0IU$-%G!<%?%V%m%C%/$N%G!<%?$r=hM}$7$^$9! #%G!<%?%U%!%$%kL>$O! "DL>o0zMQId$G0O$s$@J8;zNs$H$7$FM?$($^$9! #4X?t$O1 K\$N?t<0$G$9$,! "G^2pJQ?t%b!<%I (parametric) $G$O3 $D$N?t<0$NAH$H$7$FM?$($^$9! #

%G%U%)%k%H$G$O! "**splot** $OIA2h$5$1$k%G!<%?$N2<$K4OA4$J xy LL$rIA$-$^$9! #z $N0lHV2<$NL\@9$j$H xy J?LL$N0lCV4X78$O **set xyplane** $GJQ99$G$-$^$9! #**splot** $N<M1F$N8~$-$O **set view** $G@)8f$G$-$^$9! #>\:Y$O! "0J2<;2>H: **set view (p. 182)**, **set xyplane (p. 191)**! #

**splot** %3%^%s%I$NHO0O$N;XDj$N=q<0$O **plot** $N>l9g$HF1$8$G$9! #G^2pJQ?t%b!<%I (parametric) $G$J$1$1$P! "HO0O;XDj$O0J2<$N=g$G! "

```
splot [<xrange>][<yrange>][<zrange>] ...
```

G^2pJQ?t%b!<%I (parametric) $G$O!"HO0O;XD j$O0J2<$N=g$GM?$ ($J$1$1$P$$$1$^$;$s:

```
splot [<urange>][<vrange>][<xrange>][<yrange>][<zrange>] ...
```

**title** %*%W%7%g%s$b **plot** $HF1$8$G$9!#**with** $b **plot** $H$[$\F1$8$G$9$,!"2 <!8 5$NIA2h%9%?%$%kA4It$,;H$($k $o$1$G$O$"$j$^$;$s!#

**datafile** %*%W%7%g%s$K$O$5$i$K0c$$$,$"$j$^$9!#

G^2pJQ?t%b!<%I (parametric) $d4X?t$rMxMQ$7$F6JLL$rIA$/JL$NJ}K!$K!"5?;w%U%!%$%k'++' $rMxMQ$7$F xy J? LL$N3J;R$N>e$KI8K\E@$r@8@.$9$k$d$jJ}$,$"$j$^$9!#

0J2<$b;2>H: **show plot (p. 157)**, **set view map (p. 182)**, **sampling (p. 103)**!#

## %G!<%?%U%!%$%k (datafile)

**plot** $HF1$8$h$&$K!"**splot** $G%U%!%$%k$+$i%0%i%U$r@8@.$G$-$^$9!#

=q<0:

```
splot '<file_name>' {binary <binary list>}
                    {{nonuniform} matrix}
                    {index <index list>}
                    {every <every list>}
                    {using <using list>}
```

"" $d "-" $H$$$C$?FCJL$J%U%!%$%kL>$b **plot** $HF1MM$K5v$5$1$^$9!#0J2<;2>H: **special-filenames (p. 97)**!#

<jC;$K$$$&$H!"**binary** $d **matrix** $O$=$N%G!<%?$,FCJL$J7A$G$"$k$3$H$r!"**index** $OB?=E%G!<%?=89g%U%!%$%k $+$i$I$N%G!<%?=89g$rA*$s$GIA2h$9$k$+$r!"**every** $O3F%G!<%?=89g$+$i$I$N%G!<%?9T (ItJ,=89g) $rA*$s$GIA 2h$9$k$+$r!"**using** $O3F%G!<%?9T$+$i$I$N$h$&$KNs$rA*$V$+$r;XD j$7$^$9!#

**index** $H **every** %*%W%7%g%s$O **plot** $N>l9g$HF1$8$h$&$K?6I q$$$^$9!#**using** $b!"**using** $N%j%9%H$,2 $D$G$J $/ 3 $DI,MW$G$"$k$H$$$&$3$H$r=|$$$F$OF1MM$G$9!#

**plot** $N%*%W%7%g%s$G$"$k **smooth** $O **splot** $G$OMxMQ$G$-$^$;$s!#$7$+$7!"**cntrparam** $d **dgrid3d** $,!"@) 8B$5$1$F$O$$$^$9$,J?3j2=$N$?$a$KMQ0U$5$1$F$$$^$9!#

%G!<%?%U%!%$%k$N7A<0$O!"3FE@$, (x,y,z) $N 3 $DAH$G$"$k0J3O$O!"K\<AE*$K **plot** $HF1$8$G$9!#$b$7 0 1$D$NCM$@ $1$,M?$ ($i$1$1$P!"$=$1$O z $H$7$F; H$o$1!"%V%m%C%/HV9f$, y $H$7$F!"$=$7$F x $O$=$N%V%m%C%/Fb$G$NHV9f $,;H$o$1$^$9!#$b$7 2 $D!"$"$k$$$O 4 $D$NCM$,M?$ ($i$1$1$P!"**gnuplot** $O$=$N:G8e$NCM$r pm3d plot $G$N?' $N7W;;$K;H$$$^$9!#3 $D$NCM$O (x,y,z) $NAH$H8+$J$5$1$^$9!#B>$KCM$,$"$1$P!"$=$1$O0 lHI$K8m:9$H8+$J$5$1$^ $9!#$=$1$O **fit** $G;H$&$3$H$,2DG=$G$9!#

**splot** $N%G!<%?%U%!%$%k$G$O!"1 9T$N6u9T$O%G!<%?$N%V%m%C%/J,N%;R$G$9!#**splot** $O8D!9$N%V%m%C%/$r!"4X?t $N y-8 IN)@~$HF1$8$b$N$H$7$F07$$$^$9!#1 9T$N6u9T$GJ,N%$5$1$F$$$kE@F1;N$O@~J,$G7k$P$1$k$3$H$O$"$j$^$; $s!#A4$F$N%V%m%C%/$,A4$/F1$8E@$N?t$r; }$D>l9g!"**gnuplot** $O%V%m%C%/$r2#CG$7!"3F%V%m%C%/$NBP1~$9$kE@ F1;N$r7k$V8 IN)@~$rIA$-$^$9!#$3$1$O "grid data" $H8F$P$1!"6JLL$NIA2h!"Ey9b@~$NIA2h (**set contour**)!"1# @~=hM} (**set hidden3d**) $G$O!"$3$N7A$N%G!<%?$G$"$k$3$H$,I,MW$H$J$j$^$9!#0J2<$b;2>H: **splot grid_data (p. 199)**!#

3 Ns$N **splot** %G!<%?$K$*$$$F$O!"G^2pJQ?t%b!<%I (**parametric**) $r;XD j$9$k$3$H$O$b$O$dI TMW$G$9!#

### Matrix

gnuplot $O!"matrix (G[Ns) 7A<0$N%G!<%?F~NO$r!"2 $D$N0 [$J$k7A<0$G2r<a$9$k$3$H$,$G$-$^$9!#

$=$N 1 $D$O!"x, y $N:BI8$,0 lMM$G$"$k$H2>Dj$7$F!"$=$NCM$r$3$N0 lMM$J3J;R$N matrix $N$=$1$>$1$NMWAG M[i,j] $K3d$jEv$F$kJ}K!$G$9!#3d$jEv$F$i$1$k x :BI8$O [0:NCOLS-1] $NHO0O$N@0?t$G$9!#3d$jEv$F$i$1$k y :BI8$O [0:NROWS-1] $NHO0O$N@0?t$G$9!#$3$1$O!"%F%-%9%H%G!<%?%U%!%)%k%H$G$9$,!"%P%J%j%G!<%?$KBP $7$F$O$=$&$G$O$"$j$^$;$s!#Nc$dDI2C%-!<%o!<%I$K$D$$$F$O0J2<;2>H: **matrix uniform (p. 197)**!#

2 $DL\$N7A<0$O!"Hs0 lMM$J3J;R$G!"x, y :BI8$OL@< ($7$F$$$k$H2>Dj$9$k$b$N$G!"F~NO%G!<%?$N:G=i$N9T$ry :B I8!":G=i$NNs$rx :BI8$H$_$J$7$^$9!#%P%J%j%G!<%?$KBP$7$F$O!"1 9TL\$N:G=i$NMWAG$O!"Ns?t$G$J$1$1$P$$

$1$^$;$s!#$3$1$O!"**binary matrix** F~NO$G$O%G%U%)%k%H$G$9$,!"%F%-%9%HF~NO%G!<%?$KBP$7$F$OD12C%-!<%o!<%I **nonuniform** $,I,MW$K$J$j$^$9!#Nc$K4X$7$F$O0J2<;2>H: **matrix nonuniform (p. 197)**!#

**Uniform** 0lMM$J matrix %G!<%?$rIA2h$9$k%3%^%s%I$NNc:

```
    splot 'file' matrix using 1:2:3          # %F%-%9%H%G!<%?
    splot 'file' binary general using 1:2:3  # %P%$%J%j%G!<%?
```

0lMM$J3J;R$N matrix %G!<%?$G$O!"3F%V%m%C%/$N z $NCM$O019T$G01EY$KFI$^$1$^$9!#$9$J$o$A!"

```
  z11 z12 z13 z14 ...
  z21 z22 z23 z24 ...
  z31 z32 z33 z34 ...
```

Ey!#

%F%-%9%H%G!<%?$KBP$7$F$O!"l 9TL\$,%G!<%?$G$J$/Ns%i%Y%k$r;}$D>l9g!"D12C%-!<%o!<%I **columnheaders** $r;H$C$F$/$@$5$$!#F1MM$K!"3F9T$N:G=i$NMWAG$,%G!<%?$G$J$/%i%Y%k$G$"$k>l9g$O!"D12C%-!<%o!<%I **rowheaders** $r;HMQ$7$F$/$@$5$$!#0J2<$O!"$=$NN>J}$r;HMQ$9$kNc$G$9:

```
  $DATA << EOD
  xxx A   B   C   D
  aa  z11 z12 z13 z14
  bb  z21 z22 z23 z24
  cc  z31 z32 z33 z34
  EOD
  plot $DATA matrix columnheaders rowheaders with image
```

%F%-%9%H%G!<%?$G$O!"6u9T$d%3%a%s%H9T$OG[Ns%G!<%?$r=*N;$5$;!"?7$?$J6JLL$NLV (mesh) $r3+;O$7$^$9!#$$$D$b$N$3$H$G$9$,!"**splot** %3%^%s%I$N**index** %*%W%7%g%s$r;H$C$F%U%!%$%kFb$NLV$r<+M3$KA*Br$G$-$^$9!#

**Nonuniform** F~NO%G!<%?$N:G=i$N9T$O y :BI8$r;}$A$^$9!#F~NO%G!<%?$N:G=i$NNs$O x :BI8$r;}$A$^$9!#%P%$%J%jF~NO%G!<%?$G$O!"l 9TL\$N:G=i$NMWAG$ONs?t$G$J$1$1$P$$$1$^$;$s (%F%-%9%H%G!<%?$G$O$=$NHV9f$OL5;k$5$1$^$9)!#

Hs0lMM$J matrix %G!<%?$rIA2h$9$k%3%^%s%I$NNc:

```
    splot 'file' nonuniform matrix using 1:2:3  # %F%-%9%H%G!<%?
    splot 'file' binary matrix using 1:2:3      # %P%$%J%j%G!<%?
```

$h$C$F!"Hs0lMM$J matrix %G!<%?$N9=B$$O0J2<$N$h$&$K$J$j$^$9:

```
     <N+1>  <x0>   <x1>   <x2>   ...  <xN>
      <y0> <z0,0> <z0,1> <z0,2> ... <z0,N>
      <y1> <z1,0> <z1,1> <z1,2> ... <z1,N>
       :      :      :      :    ...    :
```

$3$1$i$O0J2<$N$h$&$J3 $D$N?t;z$NAH$KJQ49$5$1$^$9:

```
     <x0> <y0> <z0,0>
     <x0> <y1> <z0,1>
     <x0> <y2> <z0,2>
      :    :     :
     <x0> <yN> <z0,N>

     <x1> <y0> <z1,0>
     <x1> <y1> <z1,1>
      :    :     :
```

$=$7$F!"$3$1$i$N3 $D$N?t;z$NAH$O **gnuplot** $N8IN)@~$KJQ49$5$1!"$=$N8e**gnuplot** $,DL>o$NJ}K!$GIA2h$N;D$j$r9T$$$^$9!#

**Examples** 9TNs$d%Y%/%H%k$NA‘:n$N%5%V%k!<%A%s(C $K$h$k) $, **binary.c** $KMQ0U$5$l$F$$$^$9!#%P%$%J%j %G!<%?$r=q$/%k!<%A%s$O

```
int fwrite_matrix(file,m,nrl,nrl,ncl,nch,row_title,column_title)
```

$G$9!#$3$l$i$N%5%V%k!<%A%s$r;H$&Nc$, **bf_test.c** $H$7$FMQ0U$5$l$F$$$F!"$3$l$O%G%b%U%!%$%k **demo/binary.dem** MQ$KJ#?t$N%P%$%J%j%U%!%$%k$r@8@.$7$^$9!#

**plot** $G$N;HMQK!:

```
plot ‘a.dat‘ matrix
plot ‘a.dat‘ matrix using 1:3
plot ’a.gpbin’ {matrix} binary using 1:3
```

$3$l$i$OG[Ns$N9T$rIA2h$7!"using 2:3 $H$9$l$PG[Ns$NNs$rIA2h!"using 1:2 $O!"E@$N:BI8$rIA2h$7$^$9 (B?J, L50UL#$G$9)!#%*%W%7%g%s **every** $rE,MQ$9$k$3$H$GL@<(E*$K9T$dNs$r;XDj$G$-$^$9!#

Nc– %F%-%9%H%G!<%?%U%!%$%k$NG[Ns$N<4$N3HBg:

```
splot ‘a.dat‘ matrix using (1+$1):(1+$2*10):3
```

Nc– %F%-%9%H%G!<%?%U%!%$%k$NG[Ns$NBh3 9T$NIA2h:

```
plot ’a.dat’ matrix using 1:3 every 1:999:1:2
```

(9T$O0 $+$i?t$($i$l$k$N$G!"3 $G$O$J$/$F2 $r;XDj$7$^$9)!#

Gnuplot $O!"**array**, **record**, **format**, **filetype** $J$I$N general %P%$%J%j7A<0$rFCDj$9$k$h$&$J%-!<%o!<%I$r$D$1$:$K%*%W%7%g%s **binary** $r;H$&$3$H$G!"matrix %P%$%J%j%U%!%$%k$rFI$_9~$`$3$H$,$G$-$^$9!#$=$NB>$NJQ49MQ$N general %P%$%J%j%-!<%o!<%I$O!"matrix %P%$%J%j%U%!%$%k$K$bE,MQ$G$-$k$G$7$g$&!#(>\:Y$O!"0J2<;2>H: **binary general (p. 87)**!#)

### %G!<%?%U%!%$%k$NNc

0J2<$O3 <!85%G!<%?%U%!%$%k$NIA2h$NC1=c$J01$D$NNc$G$9!#

```
splot ’datafile.dat’
```

$3$3$G!""datafile.dat" $O0J2<$r4^$`$H$7$^$9:

```
# The valley of the Gnu.
   0 0 10
   0 1 10
   0 2 10

   1 0 10
   1 1 5
   1 2 10

   2 0 10
   2 1 1
   2 2 10

   3 0 10
   3 1 0
   3 2 10
```

$3$N"datafile.dat" $O4*3 $N3J;R($=$l$>$l3 E@$+$i$J$k%V%m%C%/$N4 $D$N9T) $rDj5A$9$k$3$H$KCm0U$7$F2<$5$$!#9T(%V%m%C%/) $O1 9T$N6u9T$G6h@Z$i$l$^$9!#

x $NCM$O$=$l$>$l$N%V%m%C%/$NCf$GDj?t$K$J$C$F$$$k$3$H$KCm0U$7$F2<$5$$!#$b$7y $rDj?t$NCM$H$7!"1#@~=hM}$,M-8z$J>uBV$GIA2h$9$k$H!"$=$N6JLL$ON"JV$7$G=q$+$l$k$3$H$K$J$j$^$9!#

3J;R>u%G!<%?(grid data) $KBP$7$F!"8D!9$N%V%m%C%/Fb$Gx $NCM$rDj?t$H$7$F$*$/I,MW$O$"$j$^$;$s$7!"F1$8>l=j$Ny $NCM$rF1$8CM$KB7$($F$*$/I,MW$b$"$j$^$;$s!#**gnuplot** $O8D!9$N%V%m%C%/Fb$NE@$N?t$,Ey$7$$$H$$$&$3$H$rI,MW$H$7$F$$$k$@$1$G$9!#$7$+$7!"Ey9b@~$rF3$/$N$KMQ$$$i$l$k6JLL$NLVL\$O!"BP1~$9$kE@$rNsE*$KA*$s$G7k$V$?$a!"ITB7$$$N3J;R%G!<%?$KBP$9$k6JLL$NIA2h$X$N1F6A$OM=A[$G$-$^$;$s!#$=$l$O%1!<%9%P%$%1!<%9$N86M}$G%F%9%H$9$Y$-$G$7$g$&!#

### 3J;R>u%G!<%? (grid data)

3<!85IA2h$N$?$a$N%k!<%A%s$O!"8D!9$NLVL\$N3J;R$K$*$$$F$O1l$D$NI8K\E@$H01$D$N%G!<%?E@$,$"$k!"$H$$$&7A$N3J;R>u%G!<%?MQ$K@_7W$5$l$F$$$^$9!#3F%G!<%?E@$O!"4X?t$NCM$rI>2A$9$k$3$H(0J2<;2>H: **set isosamples (p. 136)**)!"$^$?$O%G!<%?%U%!%$%k$rFI$_9~$`$3$H(0J2<;2>H: **splot datafile (p. 196)**) $K$h$C$F@8@.$5$l$^$9!#"8IN)@~" $H$$$&8@MU$O4X?t$KBP$7$F$b!"%G!<%?$KBP$7$F$b$=$NLVL\$N@~$rI=$9$b$N$H$7$FMQ$$$i$l$^$9!#LVL\$O!"I,$:$7$b x, y $K4X$9$kD9J}7A$G$J$/$F$b$h$/!"u,v $GG^2pJQ?tI=<($5$l$F$b9=$o$J$$$3$H$KCm0U$7$F2<$5$$!#0J2<;2>H: **set isosamples (p. 136)**!#

$7$+$7!"**gnuplot** $O$=$N$h$&$J7A<0$rI,$:$7$bI,MW$H$O$7$^$;$s!#Nc$($P4X?t$N>19g$O!"**samples** $O**isosamples** $H0c$C$F$$$F$b9=$$$^$;$s!#$9$J$o$A!"x-8IN)@~$N$&$A!"1 K\$N y-8IN)@~$H8r$o$J$$$b$N$,$$$/$D$+$"$k$3$H$,$"$j$^$9!#%G!<%?%U%!%$%k$N>19g$O!"8D!9$N%V%m%C%/$N$P$i$D$$$?E@$N8D?t$,A4$FF1$8$G$"$l$P!""8IN)@~$O" $O%V%m%C%/$NE@$r7k$S!""2#CG8IN)@~" $O3F%V%m%C%/$NBP1~$9$kE@F1;N$r7k$S!""6JLL" $r:n$m$&$H$7$^$9!#$I$A$i$N>19g$G$b!"Ey9b@~!"$*$h$S1#@~=hM}%b!<%I$OE@$,0U?^$7$?%U%)!<%^%C%H$G$"$C$?>19g$H$O0c$C$?IA2h$rM?$($k$3$H$K$J$j$^$9!#$P$i$D$-$N$"$k%G!<%?$O**set dgrid3d** $K$h$C$F{0[$J$k}3J;R>u%G!<%?$KJQ49$9$k$3$H$,$G$-$^$9!#

Ey9b@~$K4X$9$k%3!<%I$O!"y-8IN)@~$NE@$H!"$=$l$KBP1~$9$kNY$N y-8IN)@~>e$NE@$N4V$N@~J,$K1h$C$F$N z $ND%NO$r7WB,$7$^$9!#$h$C$F!"x-8IN)@~$K!"y-8IN)@~$H$N8rE@$H$O$J$i$J$$h$&$JI8K\E@$,$"$k$h$&$J6JLL$KBP$7$F$O!"**splot** $NEy9b@~$O$=$N$h$&$JI8K\E@$rL5;k$9$k$3$H$K$J$j$^$9!#0J2<$r;n$7$F$_$F2<$5$$:

```
set xrange [-pi/2:pi/2]; set yrange [-pi/2:pi/2]
set style function lp
set contour
set isosamples 10,10; set samples 10,10;
splot cos(x)*cos(y)
set samples 4,10; replot
set samples 10,4; replot
```

### Splot $N6JLL (splot surfaces)

**splot** $OE@$N=8$^$j$H$7$F!"$"$k$$$O!"$=$l$i$NE@$r7k$V$3$H$K$h$C$F6JLL$rI=<($9$k$3$H$,$G$-$^$9!#**plot** $HF1MM$K!"E@$O%G!<%?%U%!%$%k$+$iFI$`$3$H$b$G$-$^$9$7!";XDj$5$l$?6h4V$G4X?t$NCM$rI>2A$7$FF@$k$3$H$b$G$-$^$9!#0J2<;2>H: **set isosamples (p. 136)**!#6JLL$O!"3FE@$r@~J,$G7k$V$3$H$G6a;wE*$K:n$i$l$^$9!#0J2<;2>H: **set surface (p. 176)**!#$=$7$F$=$N>19g6JLL$O!"**set hidden3d** $GIT F)L@$K$b$G$-$^$9!#3<!856JLL$rD/$a$k8~$-$O!"**set view** $GJQ99$G$-$^$9!#

$5$i$K!"3J;R>u$N%G!<%?E@$KBP$7$F$O!"**splot** $OF1$89b$5$r;}$DE@$rJd4V$9$k$3$H$,$G$-(0J2<;2>H: **set contour (p. 122)**)!"$=$7$F$=$l$i$r7k$s$GEy9b@~$rIA$/$3$H$,$G$-$^$9!#$5$i$K!"$=$N7k$SJ}$K$O?.?D>$J@~J,$d3j$i$+$J@~$r;H$&$3$H$,$G$-$^$9(0J2<;2>H: **set cntrparam (p. 119)**)!#4X?t$O!">o$K **set isosamples** $H **set samples** $G7hDj$5$l$k3J;R>u%G!<%?$H$7$FI>2A$5$l$^$9!#0lJ}!"%U%!%$%k$N%G!<%?$O!"**data-file** $K=q$+$l$F$$$k$h$&$J3J;R>u%G!<%?%U%)!<%^%C%H$K$9$k$+!"$"$k$$$O3J;R%G!<%?$r@8@.$9$k(0J2<;2>H: **set dgrid3d (p. 126)**) $H$$$&$3$H$r$7$J$1$l$P$=$&$O$J$j$^$;$s!#

Ey9b@~$O6JLL$N>e$KI=<($9$k$3$H$b$G$-$^$9$7!"D1LL$K<M1F$9$k$3$H$b$G$-$^$9!#D1LL$X$N<M1F$O!"%U%!%$%k$K=q$-=P$9$3$H$b$G$-!"$=$7$F$=$l$r **plot** $G:F$SFI$_9~$s$G **plot** $N$h$j6/$$@07AG=NO$r@8$+$9$3$H$b$G$-$^$9!#

## Stats (4JC1$JE}7W>pJs)

=q<0:

```
stats {<ranges>} 'filename' {matrix | using N{:M}} {name 'prefix'}
      {{no}output}
```

$3$N%3%^%s%I$O!"%U%!%$%k$N 1 Ns!"$^$?$O 2 Ns$N%G!<%?$N4JC1$JE}7W>pJs$rDs6!$7$^$9!#**using** ;XDj;R$O!"plot %3%^%s%I$HF1$87A$G2r<a$5$l$^$9$,!"**index**, **every**, **using** ;XDj$K4X$9$k>\:Y$K$D$$$F$O0J2<;2>H: **plot (p. 86)**!#%G!<%?E@$O!"$=$N2r@O$NA0$K xrange, yrange $K=>$C$F%U%#%k%?$K$+$1$i$l$^$9!#0J2<;2>H: **set xrange (p. 186)**!#$=$N>pJs$O%G%U%)%k%H$G$O%9%/%j!<%s$K=PNO$5$l$^$9$,!"%3%^%s%I **set print** $r@h$K;H$&$3$H$G=P

NO$r%U% !%$%k$K% j%@%$%l%/%H$7$?$j! "% *%W%7%g%s **nooutput** $r; H$&$3$H$G=PNO$7$J$$$h$&$K$9$k$3$H$b$G$-$^$9! #

2hLL=PNO$K2C$(! "gnuplot $O8D! 9$NE}7W>pJs$r 3 $D$NJQ?t%0%k! <%W$KJ]B8$7$^$9! #1 HVL\$NJQ?t%0%k! <%W$O! "$I$s$J%G! <%?$,JB$s$G$$$k$+$r< ($7$^$9:

| | | |
|---|---|---|
| `STATS_records` | $N$ | HO0OFb$N%G! <%?9T$NAm?t |
| `STATS_outofrange` | | HO0O30$H$7$F= \|$+$l$?9T?t |
| `STATS_invalid` | | L58z/IT40A4/7gB;%G! <%?9T$NAm?t |
| `STATS_blank` | | 6u9T$NAm?t |
| `STATS_blocks` | | %U% !%$%kFb$N%G! <%?$N index %V%m%C%/?t |
| `STATS_columns` | | %G! <%?@hF,9T$NNs?t |

2 HVL\$NJQ?t%0%k! <%W$O! "1 $D$NNs$N! "HO0OFb$N%G! <%?$N@-<A$r< ($7$^$9! #$3$NNs$O y $NCM$H$7$F07$o$l$^$9! # y <4$,<+F0=L<\$N>l9g$O! "BP>]$H$9$kHO0O$K8B3&$O$"$j$^$;$s$,! "$=$&$G$J$1$l$PHO0O [ymin:ymax] Fb$NCM$N$_$rBP>]$H$7$^$9! #

2 $D$NNs$rF1; ~$K 1 2s$N **stats** %3%^%s%I$G2r@O$9$k>l9g$O! "3FJQ?tL>$K"_x", "_y" $H$$$&@\Hx<-$rDI2C$7$^$9! #Nc$ ($P STATS_min_x $O! "1 $DL\$NNs$N%G! <%?$N:G>.CM$G! "STATS_min_y $O 2 $DL\$NNs$N%G! <%?$N:G>.CM$r0UL#$7$^$9! #$3$N>l9g! "E@$O xrange $H yrange $NN>J}$G8!::$9$k$3$H$G$U$k$$$K$+$1$^$9! #

| | | | |
|---|---|---|---|
| `STATS_min` | | $\min(y)$ | HO0OFb$N%G! <%?E@$N:G>.CM |
| `STATS_max` | | $\max(y)$ | HO0OFb$N%G! <%?E@$N:GBgCM |
| `STATS_index_min` | | $i \mid y_i = \min(y)$ | data[i] == STATS_min $H$J$kE:;zi |
| `STATS_index_max` | | $i \mid y_i = \max(y)$ | data[i] == STATS_max $H$J$kE:;zi |
| `STATS_mean` | $\bar{y} =$ | $\frac{1}{N}\sum y$ | HO0OFb$N%G! <%?E@$NJ?6QCM |
| `STATS_stddev` | $\sigma_y =$ | $\sqrt{\frac{1}{N}\sum(y-\bar{y})^2}$ | HO0OFb$N%G! <%?E@$NI8K\I8=`JP:9 |
| `STATS_ssd` | $s_y =$ | $\sqrt{\frac{1}{N-1}\sum(y-\bar{y})^2}$ | HO0OFb$N%G! <%?E@$NITJPI8=`JP:9 |
| `STATS_lo_quartile` | | | Bh0l (2<$N) ;MJ,0L6-3&CM |
| `STATS_median` | | | %a%8%"%sCM (BhFs;MJ,0L6-3&CM) |
| `STATS_up_quartile` | | | Bh;0 (>e$N) ;MJ,0L6-3&CM |
| `STATS_sum` | | $\sum y$ | OB |
| `STATS_sumsq` | | $\sum y^2$ | J?J}OB |
| `STATS_skewness` | | $\frac{1}{N\sigma^3}\sum(y-\bar{y})^3$ | HO0OFb$N%G! <%?E@$NODEY |
| `STATS_kurtosis` | | $\frac{1}{N\sigma^4}\sum(y-\bar{y})^4$ | HO0OFb$N%G! <%?E@$N@mEY |
| `STATS_adev` | | $\frac{1}{N}\sum\lvert y-\bar{y}\rvert$ | HO0OFb$N%G! <%?E@$NJ?6Q@dBPJP:9 |
| `STATS_mean_err` | | $\sigma_y/\sqrt{N}$ | J?6QCM$NI8=`8m:9 |
| `STATS_stddev_err` | | $\sigma_y/\sqrt{2N}$ | I8=`JP:9$NI8=`8m:9 |
| `STATS_skewness_err` | | $\sqrt{6/N}$ | ODEY$NI8=`8m:9 |
| `STATS_kurtosis_err` | | $\sqrt{24/N}$ | @mEY$NI8=`8m:9 |

3 HVL\$NJQ?t%0%k! <%W$O! "2 $D$NNs$N%G! <%?$N2r@O@lMQ$G$9! #

| | |
|---|---|
| `STATS_correlation` | x $H y $NITJPAj4X78?t |
| `STATS_slope` | 2s5"D>@~ y = Ax + B $N78?t A |
| `STATS_slope_err` | A $NIT3N$+$5 |
| `STATS_intercept` | 2s5"D>@~ y = Ax + B $N78?t B |
| `STATS_intercept_err` | B $NIT3N$+$5 |
| `STATS_sumxy` | @QOB (x*y $NOB) |
| `STATS_pos_min_y` | y $N:G>.CM$rM?$ ($k x :BI8 |
| `STATS_pos_max_y` | y $N:GBgCM$rM?$ ($k x :BI8 |

**matrix** $,;XDj$5$l$k$H! "A4$F$N9TNsMWAG$,$=$N2r@O$NBP>]$K$J$j$^$9! #$=$N9TNs$N%5%$%:$O! "JQ?t STATS_size_x $H STATS_size_y $KJ]B8$5$l$^$9! #

2 $D0J>e$N%U% !%$%k$d%G! <%?Ns$+$i$NE}7W>pJs$rJBNs$K07$&$3$H$,$G$-$l$PJXMx$G$9$N$G! "JQ?t$N%G%U%)%k%H$N@\F,<-$G$"$k "STATS" $r! "% *%W%7%g%s **name** $G%f! <%6$,;XDj$9$kJ8;zNs$KCV$-49$($k$3$H$,$G$-$k$h$&$K$J$C$F$$$^$9! #Nc$($P! "0[$J$k 2 $D$N%U% !%$%k$N$=$l$>$l$N 2 NsL\$N%G! <%?$NJ?6QCM$O0J2<$N$h$&$K$7$FHf3S$G$-$^$9:

```
stats "file1.dat" using 2 name "A"
stats "file2.dat" using 2 name "B"
if (A_mean < B_mean) {...}
```

%-!<%o!<%I **columnheader** $d4X?t **columnheader(N)** $K$h$j!"%G!<%?%U%!%$%k$N1 9TL\$+$i<hF@$7$?FbMF $K$h$j@\F,<-$r@8@.$9$k$3$H$b$G$-$^$9:

```
do for [COL=5:8] { stats 'datafile' using COL name columnheader }
```

STATS_index_xxx $G<($5$l$kE:;z$NCM$O!"plot %3%^%s%I$NBh0 5?;wNs($0) $NCM$KBP1~$7!":G=i$NE@$OE:;z$O 0!":G8e$NE@$NE:;z$O N-1 $H$J$j$^$9!#

%a%8%"%s$H;MJ,0L6-3&CM$rC5$9:]$O%G!<%?$NCM$r%=!<%H$7!"E@$NAm?t N $,4q?t$N>l9g$O!"$=$N(N+1)/2 HVL\$NCM$r%a%8%"%sCM$H$7!"N $,6v?t$N>l9g$O!"N/2 HVL\$H(N+2)/2 HVL\$NCM$NJ?6QCM$r%a%8%"%sCM$H$7$^$9!# ;MJ,0L6-3&CM$bF1MM$K=hM}$7$^$9!#

$=$N8e$NIA2h$KCm<a$r$D$1$k$?$a$K%3%^%s%I **stats** $rMxMQ$7$?Nc$K$D$$$F$O!"0J2<$r;2>H$7$F$/$@$5$$!# stats.dem!#

8=:_$N%P!<%8%g%s$Ngnuplot $N **stats** %3%^%s%I$G$O!"F|;~%U%#!<%k%I(**set xdata time** $d **set ydata time**) $,$J$$>l9g$OBP?t<4$N%G!<%?$b=hM}$G$-$^$9!#$3$N@)8B$O!">-Mh$N%P!<%8%g%s$G4KOB$5$l$k$G$7$g$&!#

## System

=q<0:

```
system "command string"
! command string
output = system("command string")
show variable GPVAL_SYSTEM
```

**system "command"** $O!"%*%Z%l!<%F%#%s%0%7%9%F%`$N%G%U%)%k%H%7%'%k$r8F$S=P$7!"$=$N%5%V%W%m%;%9$H$7$F"command" $r<B9T$7$^$9!#4X?t$H$7$F **system("command")** $r8F$S=P$7$?>l9g$O!"$=$N%5%V%W%m%;%9$NI8=`=PNO$+$i$NJ8;z%9%H%j!<%`$rJ8;zNs$H$7$FJV$7$^$9!#:G8e$K2~9T$,$D$$$F$$$k>l9g$O!"$=$l$O7k2LJ8;zNs$+$i$O=|5n$5$l$^$9!#0J2<$b;2>H: **backquotes (p. 48)**!#

$=$N%5%V%W%m%;%9$N=*N;%3!<%I$O!"JQ?t GPVAL_SYSTEM_ERRNO $H GPVAL_SYSTEM_ERRMSG $KJ]B8$5$l$^$9!#$7$+$7!"$b$7%3%^%s%IJ8;zNs$,2 $D0J>e$N%W%m%0%i%`$r8F$S=P$7$F$$$k>l9g$O!"$=$N$&$A$N0l$D$N%W%m%0%i%`$,%(%i!<$r=P$7$F$b!""@.8y" $rJV$92DG=@-$,$"$k$3$H$KCm0U$7$F$/$@$5$$!#Nc$($P!"file = system("ls -1 *.plt | tail -1") $O!"*.plt %U%!%$%k$,0l$D$b$J$$>l9g$G$b"@.8y" $,JV$j$^$9!#$=$l$O!"**ls** $,<:GT$7$F$b **tail** $O@.8y$9$k$+$i$G$9!#

%7%9%F%`%3%^%s%I$O!"0J2<$K<($9$h$&$K30It4X?t$r gnuplot $K<h$jF~$l$k$N$KMxMQ$G$-$^$9$,!"$3$l$O$=$N4X?t$r8F$S=P$9EY$KJL$N%5%V%W%m%;%9$r6/@)E*$K@8@.$9$k$3$H$K$J$j$^$9!#$h$C$F!"$?$/$5$s8F$S=P$92DG=@-$N$"$k4X?t$O!"F0E*%i%$%V%i%j$+$i%5%V%k!<%A%s$H$7$FD>@\8F$S=P$97A$G<h$jF~$l$kJ}$,$$$$$G$7$g$&!#0J2<;2>H: **import (p. 84)**, **plugin.dem (p. ??)**!#

```
f(x) = real(system(sprintf("somecommand %f", x)))
```

## Test

$3$N%3%^%s%I$O!"=PNO7A<0$d%Q%l%C%H$G$I$N$h$&$J=PNO$,9T$J$($k$+$r2hA|$G%F%9%H$7I=<($7$^$9!#

=q<0:

```
test {terminal | palette}
```

**test** $^$?$O **test terminal** $O!"8=:_;HMQCf$N=PNO7A<0 (**terminal**) $G;H$($k@~$N<oN`!"E@$N<oN`!"$^$?$OMxMQ2DG=$J$=$NB>$NIA2h$r@8@.$7$^$9!#

**test palette** $O!"R(z),G(z),B(z) (0<=z<=1) $N>uBV$rIA2h$7$^$9!#$3$l$i$O8=:_$N%+%i!<%Q%l%C%H(**palette**) $N RGB @.J,$r<($7$^$9!#$^$?!"RGB $r3%?'3,D4$K<IA|$9$k NTSC 78?t$rMQ$$$F7W;;$5$l$?;k8wEY$bIA2h$7$^$9!#$3$NBP1~4X78$O!"$PALETTE $H$$$&L>A0$N%G!<%?%V%m%C%/$K$b<h$j9~$^$l$^$9!#

## Toggle

=q<0:

```
     toggle {<plotno> | "plottitle" | all}
```

$3$N%3%^%s%I$O!"BPOC7?=PNO7A<0 (qt, wxt, x11) $GI=< ($5$1$F$$$k%0%i%U$Nkey % (%s%H% j>e$G: 8% /% j%C% /$7$? $N$HF1$88z2L$rM?$ ($^$9! #$9$J$o$A! "$=$N%0%i%U$,I=< ($5$1$F$$$1$P$=$1$r>C$7! "%0%i%U$,>C$ ($F$$$1$P:F$S I=< ($7$^$9! #**toggle all** $O! "% [%C%H%-! < "i" $HF1MM! "M-8z$J%0%i%U$9$Y$F$K:nMQ$7$^$9! #**toggle "title"** $N7A <0$O! "%0%i%U$N%?%$%H%k$H40A4$K0lCW$9$k%?%$%H%k$r; XD j$9$kI,MW$,$"$j$^$9$,! "**toggle "ti*"** $N>19g$O! "%0 %i%U$N%?%$%H%k$H'*' $NA0$NItJ,$,0lCW$9$k:G=i$N%0%i%U$K:nMQ$7$^$9! #8=:_$N=PNO7A<0$,BPOC7?$G$J$$>19g $O! "%3%^%s%I toggle $O2?$b$7$^$;$s! #

## Undefine

1 $D! "$^$?$OJ#?t$ND j5A:Q$_$N%f! <%6JQ?t$r:o=|$7$^$9! #$3$1$O! "=i4|2=%F%9%H$r4^$ '$h$&$J%9% /% j%W%H$N>u BV$r% j%;%C%H$9$k$N$KJXMx$G$7$g$&! #

JQ?tL>$K$O! ": G8e$NJ8; z$H$7$F%o%$%k%I%+! <%IJ8; z * $r; H$&$3$H$,$G$-$^$9! #%o%$%k%I%+! <%IJ8; z$,8+$D$+$k $H! "$=$1$h$jA0$NItJ,$G; O$^$k$9$Y$F$NJQ?t$r:o=|$7$^$9! #$3$1$O! "6&DL$N@\F,81$r; H$C$F$$$kJ#?t$NJQ?t$r :o=|$9$k$N$KJXMx$G$7$g$&! #$?$@$7! "%o%$%k%I%+! <%IJ8; z$OJQ?tL>$N:G8e$K$7$+; H$ ($J$$$3$H$KCm0U$7$F$/$@ $5$$! #**undefine** $K%o%$%k%I%+! <%IJ8; z$N$_$r0z?t$H$7$FM?$ ($?>19g$O2?$b$7$^$;$s! #

Nc:

```
     undefine foo foo1 foo2
     if (!exists("foo")) load "initialize.gp"

     bar = 1; bar1 = 2; bar2 = 3
     undefine bar*                  # 3 $D$NJQ?t$rA4It:o=|
```

## Unset

%3%^%s%I **set** $G@_Dj$7$?%*%W%7%g%s$O! "$=$1$KBP1~$7$? **unset** %3%^%s%I$K$h$C$F$=$N%G%U%)%k%H$NCM$KLa$9 $3$H$,2DG=$G$9! #**unset** %3%^%s%I$K$O7+$jJV$7@a$bMxMQ$G$-$^$9! #0J2<; 2>H: **plot for (p. 104)**! #

Nc:

```
     set xtics mirror rotate by -45 0,10,100
     ...
     unset xtics

     # HV9f 100 $+$i 200 $^$G$N%i%Y%k$r unset
     unset for [i=100:200] label i
```

### Linetype

=q<0:

```
     unset linetype N
```

0JA0$KC10l$N@~<o$K3d$jEv$F$?$9$Y$F$NFC@-$r:o=|$7$^$9! #$3$N8e$K$3$N@~<o$r; HMQ$7$?>19g! "FC@-! "?'$O8= :_$N=PNO7A<0$K%G%U%)%k%H$G@_Dj$5$1$F$$$k$b$N$r; HMQ$7$^$9 ($9$J$o$A gnuplot 4.6 $h$jA0$N%P! <%8%g%s$G M-8z$@$C$?! "$$$o$f$k%G%U%)%k%H$N@~<o)! #

### Monochrome

8=:_M-8z$JGr9u$N@~<o$r%+%i! <$N@~<o$K@Z$jBX$ ($^$9! #**set color** $HF1Ey$G$9! #

## Output

J#?t$N%0%i%U$r0 l$D$N=PNO%U% !%$%k$K=q$-=P$9$3$H$,$G$-$k=PNO7A<0$b$"$k$N$G! "IA2h$N8e$G=PNO%U% !%$%k$r <+F0E*$K$OJD$8$^$;$s! #$h$C$F$=$N%U% !%$%k$r0BA4$K0u:~Ey$r$9$k$?$a$K$O! "$^$:L@<(E*$K **unset out** $d **set output** $H$9$k$3$H$GA0$N%U% !%$%k$rJD$8$?>e$G?7$7$$%U% !%$%k$r3+$$$F$/$@$5$$! #

## Terminal

%W%m%0%i% ‘$N:G=i$KM-8z$K$J$k%G%U%)%k%H$N=PNO7A<0$O! "8D! 9$N%7%9%F% ‘4D6-! "gnuplot $N%3%s%Q%$%k% *%W%7%g %s! "$*$h$S4D6-JQ?t GNUTERM $K0MB8$7$^$9! #$=$N%G%U%)%k%H$,2?$G$"$C$F$b! "gnuplot $O$=$1$rFbItJQ?t GNUTERM $KJ]B8$7$F$$$^$9! #%3%^%s%I **unset terminal** $O! "$=$N=i4 |=i4 |=PNO7A<0$KI |5"$7! "$3$1$O! "**set terminal GNUTERM** $H$9$k$3$H$HF1$8$G$9! #$7$+$7! "GNUTERM $,=PNO7A<0L>$N8e$K terminal %*%W%7%g %s$b4^$s$G$$$k>l9g$O! "$=$NBe$o$j$K**set terminal @GNUTERM** $H$9$kI,MW$,$"$j$^$9! #

# Update

Cm0U: $3$N%3%^%s%I$O! VHs?d>)! W$G$9! #Be$o$j$K **save fit** $r;HMQ$7$F$/$@$5$$! #

%3%^%s%I **update** $O! "%P!<%8%g%s 5.2 $G$O8eJ}8_4 9@-$N$?$a$K;D$7$F$"$j$^$9$,! ">-Mh$O:o=|$9$kM=Dj$G$9! #

=q<0:

```
update <filename> {<filename>}
```

$3$N%3%^%s%I$O! "M?$($i$1$?%U% !%$%k$KJ]B8$5$1$F$$$kJQ?t$r8=:_$NCM$K99?7$7$^$9$,! "$3$1$i$O=i4 |CM$N%U% !%$%k$HF1$8=q<0$G$J$1$1$P$$$1$^$;$s! #0J2<;2>H: **fit (p. 75)**! #

$=$N%U% !%$%k$,B8:_$7$J$$>l9g! "8=:_Dj5A$5$1$F$$$k$9$Y$F$N%f! <%6JQ?t$r4^$ ‘?7$7$$%U% !%$%k$r:n@.$7$^$9 $,! ":G8e$N fit Fb$G;HMQ$7$J$+$C$?JQ?t$K$O$9$Y$F "#FIXED" $H0u$r$D$1$F$$$^$9! #$3$1$O! "fit JQ?t$N8=:_ $NCM$r8e$G;H$&$?$a$K! "$"$k$$$O=*N;/CfCG$7$?Ev$F$O$a$r:F<B9T$9$k$?$a$KJ]B8$7$F$*$/$N$KM-MQ$G$9! #

2 HVL\$N%U% !%$%kL>$r;XDj$9$k$H! "85$N%Q%i%a! <%?%U% !%$%k$OJQ99$;$:$K2 HVL\$N%U% !%$%k$NU}$K99?7$5$1$? CM$r=q$-=P$7$^$9! #

$=$&$G$J$1$1$P! ";XDj$7$?%U% !%$%k$,B8:_$9$1$P **gnuplot** $O$=$N%U% !%$%kL>$K **.old** $r$D$1$F%U% !%$%kL>$r JQ99$7! ";XDj$7$?%U% !%$%kL>$N%U% !%$%k$r?7$?$K3+$-D>$7$^$9! #$D$^$j! ""**update ’fred’**" $H$9$k$H! "$=$1$O "**!rename fred fred.old; update ’fred.old’ ’fred’**" $H$7$?$3$H$HF1$8$3$H$K$J$j$^$9! #

# While

=q<0:

```
while (<expr>) {
    <commands>
}
```

$3$1$O! "%3%^%s%I$N%V%m%C%/$r! "<expr> $, 0 $G$J$$CM$HI>2A$5$1$k4V! "7+$jJV$7<B9T$7$^$9! #$3$N%3%^%s%I $O! "8E$$7A<0 ($+$C$3$J$7) $N if/else 9=J8$H0 1=o$K;H$&$3$H$O$G$-$^$;$s! #0J2<$b;2>H: **do (p. 74)**, **continue (p. 74)**, **break (p. 72)**! #

# Part IV

# =PNO7A<0 (Terminal)

## =PNO7A<0$N0lMw

gnuplot $O$H$F$bB?$/$N=PNO7A<0$r%5%]!<%H$7$F$$$^$9!#$3$l$i$O!"E,@Z$J=PNO7A<0$r!"I,MW$J$i5!G=$rJQ99$9$kDI2C%*%W%7%g%s$r$D$1$FA*Br$9$k$3$H$K$h$j@_Dj$5$l$^$9!#0J2<;2>H: **set terminal (p. 177)**!#

$3$NJ8=q$O!"$"$J$?$N%7%9%F%`>e$G=i4|@_Dj$*$h$S%$%s%9%H!<%k$,$J$5$l$J$+$C$?$?$a$KMxMQ$G$-$J$$=PNO7A<0$K$D$$$F$b5-=R$5$l$F$$$k$+$bCN$l$^$;$s!#%$%s%9%H!<%k$5$l$?8D!9$Ngnuplot $G!"$I$N=PNO7A<0$,M-8z$J$N$+$N0lMw$r8+$k$K$O!"%*%W%7%g%s$r2?$b$D$1$:$K 'set terminal' $HBG$C$F$/$@$5$$!#

(LuCm: $3$NF|K\8lLu$K4^$^$l$k terminal $N%^%K%e%"%k$O!"$=$N0lMw$K$O$J$$=PNO7A<0$N$b$N$b4^$^$l$F$$$k$+$b$7$l$^$;$s$7!"5U$K$=$N0lMwFb$N=PNO7A<0$G%^%K%e%"%k$,$J$$$b$N$b$"$k$+$b$7$l$^$;$s!#)

**legacy** $H0u$N$D$$$?=PNO7A<0$O!":G6a$N%P!<%8%g%s$N gnuplot $G$O%G%U%)%k%H$G$O%S%k%I$5$l$:!"<B:]$K$O;HMQ$G$-$J$$$+$b$7$l$^$;$s!#

## Aifm

Cm0U: 8E$$ **(legacy)** =PNO7A<0!"85!9$O Adobe Illustrator 3.0+ MQ!#Adobe Illustrator $O%1%Y%k 1 $N PostScript %U%!%$%k$rD>@\G'<1$9$k$N$G!"$3$l$NBe$o$j$K **set terminal post level1** ;H$&$Y$-$G$7$g$&!#

=q<0:

```
set terminal aifm {color|monochrome} {"<fontname>"} {<fontsize>}
```

## Aqua

$3$N=PNO7A<0$O Mac OS X >e$NI=<($K4X$9$k AquaTerm.app $K0MB8$7$F$$$^$9!#

=q<0:

```
set terminal aqua {<n>} {title "<wintitle>"} {size <x> <y>}
                  {font "<fontname>{,<fontsize>}"}
                  {linewidth <lw>}"}
                  {{no}enhanced} {solid|dashed} {dl <dashlength>}}
```

<n> $OIA2h$9$k%&%#%s%I%&$NHV9f(%G%U%)%k%H$G$O 0) <wintitle> $O%?%$%H%k%P!<$KI=<($5$l$kL>A0(%G%U%)%k%H$O "Figure <n>"), <x> <y> $OIA2h%5%$%:(%G%U%)%k%H$O 846x594 pt = 11.75x8.25 %$%s%A) $G$9!#

;HMQ$9$k%U%)%s%H$O <fontname> $G;XDj$7(%G%U%)%k%H$O "Times-Roman")!"%U%)%s%H%5%$%:$O <fontsize> $G;XDj$7$^$9(%G%U%)%k%H$O 14.0 pt)!#

aqua =PNO7A<0$O!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode; 0J2<;2>H: **enhanced (p. 27)**) $r!"=E$M=q$-0J30$O%5%]!<%H$7$F$^$9!#%U%)%s%H$N;HMQ$O%7%9%F%`$GM-8z$J%U%)%s%H$K@)8B$5$l$F$$$^$9!#J8;z%(%s%3!<%G%#%s%0$O!"**set encoding** $GA*Br$G$-$^$9$,!"8=:_$O iso_latin_1, iso_latin_2, cp1250 $H UTF8 (default) $r%5%]!<%H$7$F$$$^$9!#

6J@~$O!"<B@~$+E@@~(%G%U%)%k%H$O<B@~) $N$$$:$l$+$GIA2h$G$-!"E@@~$N4V3V$OG\N( <dashlength> (>0) $GJQ99$G$-$^$9!#

## Be

=PNO7A<0 **be** $O!"X %5!<%P$rMxMQ$9$k **beos** %*%Z%l!<%F%#%s%0%7%9%F%`>e$G gnuplot $r%3%s%Q%$%k$9$k?M$N$?$a$N$b$N$G$9!#4D6-JQ?t **DISPLAY** $,%;%C%H$5$l$F$$$k$+!"4D6-JQ?t **TERM** $, **xterm** $K%;%C%H$5$l$F$$$k$+!"$^$?$O%3%^%s%I%i%$%s%*%W%7%g%s$H$7$F **-display** $,;H$o$l$F$$$l$P!"%W%m%0%i%`$N5/F0;~$K$3$N=PNO7A<0$,A*Br$5$l$^$9!#

=q<0:

```
set terminal be {reset} {<n>}
```

J#?t$N%0%i%UIA2h%&%#%s%I%&$r%5%]!<%H$7$F$$$^$9!#**set terminal be <n>** $CHV9f n $N%&%#%s%I%&$K=PNO$7$^$9!#n>0 $N>l9g!"$=$NHV9f$O%&%#%s%I%&?%$%H%k$H%"%$%3%sL>$K **gplt <n>** $H$7$FIU$1$i$1$^$9!#8=:_$N%&%#%s%I%&$O%+!<%=%k5-9f$NJQ2=$G6hJL$G$-$^$9 (%G%U%)%k%H%+!<%=%k$+$i==; z%+!<%=%k$X)!#

**gnuplot** %I%i%$%P$,JL$J=PNO%I%i%$%P$KJQ99$5$1$F$b!"IA2h%&%#%s%I%&$O3+$$$?$^$^$K$J$j$^$9!#IA2h%&%#%s%I%&$O!"$=$N%&%#%s%I%&$K%+!<%=%k$rCV$$$FJ8;z q $r2!$9$+!"%&%#%s%I%&^%M!<%8%c$N%a%K%e!<$N **close** $rA*Br$9$1$PJD$8$k$3$H$,$G$-$^$9!#**reset** $r<B9T$9$1$PA4$F$N%&%#%s%I%&$r0lEY$KJD$8$1$^$9!#$=$1$O<B:]$K%&%#%s%I%&$r4IM}$7$F$$$k;R%W%m%;%9$r=*N;$7$^$9 ($b$7 **-persist** $,;XDj$5$1$F$$$J$1$1$P)!#

IA2h%&%#%s%I%&$O **-persisit** %*%W%7%g%s$,M?$ ($i$1$F$$$J$1$1$P!"BPOC$N=*N;;~$K<+F0E*$KJD$8$i$1$^$9!#

IA2h%5%$%:$H%"%9Z%/%HHf$O!"**gnuplot** $N%&%#%s%I%&$r%j%5%$%:$9$k$3$H$G$bJQ99$G$-$^$9!#

@~$NI}$HE@$N%5%$%:$O **gnuplot** $N **set linestyle** $GJQ992DG=$G$9!#

=PNO%I%i%$%P **be** $K4X$7$F$O!"**gnuplot** $O(5/F0;~$K)!"%3%^%s%I%i%$%s!"$^$?$O@_Dj%U%!%$%k$+$i!"geometry $d font, name $J$I$NDI>o$N X Toolkit %*%W%7%g%s$d%j%=!<%9$N;XDj$r<u$1IU$1$^$9!#$=$1$i$N%*%W%7%g%s$K$D$$$F$O X(1) %^%K%e%"%k%Z!<%8 ($d$=$1$HF1Ey$N$b$N) $r;2>H$7$F$/$@$5$$!#

B>$K$b **be** =PNO7A<0MQ$NB?$/$N **gnuplot** $N%*%W%7%g%s$,$"$j$^$9!#$3$1$i$O **gnuplot** $r8F$V$H$-$K%3%^%s%I%i%$%s%*%W%7%g%s$H$7$F;XDj$9$k$+!"$^$?$O@_Dj%U%!%$%k".Xdefaults" $N%j%=!<%9$H$7$F;XDj$G$-$^$9!#$3$1$i$O5/F0;~$K@_Dj$5$1$k$N$G!"**gnuplot** <B9T;~$K$OJQ99$G$-$^$;$s!#

## %3%^%s%I%i%$%s%*%W%7%g%s (command-line_options)

X Toolkit %*%W%7%g%s$K2C$(!"0J2<$N%*%W%7%g%s$, gnuplot $NN)$A>e$2;~$N%3%^%s%I%i%$%s$G!"$^$?$O%f!<%6$N%U%!%$%k".Xdefaults" Fb$N%j%=!<%9$H$7$F;XDj$G$-$^$9:

| | |
|---|---|
| '-mono' | %+%i!<%G%#%9%W%l%$>e$G6/@)E*$KGr9uIA2h |
| '-gray' | %0%l%$%9%1!<%k$^$?$O%+%i!<%G%#%9%W%l%$>e$G$N%0%l%$%9%1!<%kIA2h<br>(%G%U%)%k%H$G$O%0%l%$%9%1!<%k%G%#%9%W%l%$$OGr9uIA2h$r<u$1IU$1$k) |
| '-clear' | ?7$7$$IA2h$rI=<($9$kA0$K(=V4VE*$K) 2hLL$r>C5n |
| '-raise' | 3FIA2h8e$KIA2h%&%#%s%I%&$r:GA0LL$X=P$9 |
| '-noraise' | 3FIA2h8e$KIA2h%&%#%s%I%&$r:GA0LL$X=P$9$3$H$O$7$J$$ |
| '-persist' | gnuplot %W%m%0%i%`=*N;8e$bIA2h%&%#%s%I%&$r;D$9 |

>e5-$N%*%W%7%g%s!"$O%3%^%s%I%i%$%s>e$G$N;XDj=q<0$G!"".Xdefaults" $K%j%=!<%9$H$7$F;XDj$9$k$H$-$O0[$J$k=q<0$r;H$$$^$9!#

Nc:

```
gnuplot*gray: on
```

**gnuplot** $OIA2h%9%?%$%k **points** $GIA2h$9$kE@$N%5%$%:$N@)8f$K$b!"%3%^%s%I%i%$%s%*%W%7%g%s (**-pointsize <v>**) $H%j%=!<%9 (**gnuplot*pointsize: <v>**) $rDs6!$7$F$$$^$9!#CM **v** $OE@$N%5%$%:$N3HBgN($H$7$F;H$o$1$k<B?tCM(0 < v <= 10) $G!"Nc$($P **-pointsize 2** $O%G%U%)%k%H$N%5%$%:$N 2 G\!"**-pointsize 0.5** $OIaDL$N%5%$%:$NH>J,$NE@$,;H$o$1$^$9!#

## Gr9u%*%W%7%g%s (monochrome_options)

Gr9u%G%#%9%W%l%$$KBP$7$F$O **gnuplot** $OIA2h?' (foreground) $bGX7J?' (background) $bM?$($^$;$s!#%G%U%)%k%H$G$OGX7J$OGr!"IA2h$O9u$G$9!#**-rv** $d **gnuplot*reverseVideo: on** $N>l9g$K$OGX7J$,9u$GIA2h$OGr$K$J$j$^$9!#

## %+%i!<%j%=!<%9 (color_resources)

%+%i!<%G%#%9%W%l%$$KBP$7$F$O!"**gnuplot** $O0J2<$N%j%=!<%9 ($3$3$G$O$=$N%G%U%)%k%H$NCM$r<($7$^$9)!"$^$?$OGr9u3,D4 (greyscale) $N%j%=!<%9$r;2>H$7$^$9!#%j%=!<%9$NCM$O%7%9%F%`>e$N BE rgb.txt %U%!%$%k$K=q$+$1$F$$$k?'L>!"$^$?$O 16 ?J$N?';XDj (BE $N%^%K%e%"%k$r;2>H) $+!"?'L>$H6/EY (0 $+$i 1 $N4V$NCM) $r%3%s%^$G6h@Z$C$?CM$r;HMQ$G$-$^$9!#Nc$($P **blue, 0.5** $OH>J,$N6/EY$N@D!"$r0UL#$7$^$9!#

```
gnuplot*background: white
gnuplot*textColor: black
gnuplot*borderColor: black
gnuplot*axisColor: black
gnuplot*line1Color: red
gnuplot*line2Color: green
gnuplot*line3Color: blue
gnuplot*line4Color: magenta
gnuplot*line5Color: cyan
gnuplot*line6Color: sienna
gnuplot*line7Color: orange
gnuplot*line8Color: coral
```

$3$l$i$K4X$9$k%3%^%s%I%i%$%s$N=q<0$O!"Nc$($P0J2<$NDL$j$G$9!#

Nc:

```
gnuplot -background coral
```

### 3%?'3,D4%j%=!<%9 (grayscale_resources)

**-gray** $rA*Br$9$k$H!"**gnuplot** $O!"%0%l%$%9%1!<%k$^$?$O%+%i!<%G%#%9%W%l%$$KBP$7$F!"0J2<$N%j%=!<%9$r;2>H$7$^$9($3$3$G$O$=$N%G%U%)%k%H$NCM$r<($7$^$9)!#%G%U%)%k%H$NGX7J?'$O9u$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

```
gnuplot*background: black
gnuplot*textGray: white
gnuplot*borderGray: gray50
gnuplot*axisGray: gray50
gnuplot*line1Gray: gray100
gnuplot*line2Gray: gray60
gnuplot*line3Gray: gray80
gnuplot*line4Gray: gray40
gnuplot*line5Gray: gray90
gnuplot*line6Gray: gray50
gnuplot*line7Gray: gray70
gnuplot*line8Gray: gray30
```

### @~IA2h%j%=!<%9 (line_resources)

**gnuplot** $OIA2h$N@~$NI}(%T%/%;%kC10L)$N@_Dj$N$?$a$K0J2<$N%j%=!<%9$r;2>H$7$^$9($3$3$G$O$=$N%G%U%)%k%H$NCM$r<($7$^$9)!#0 $^$?$O 1 $O:G>.$N@~I}$N 1 %T%/%;%kI}$r0UL#$7$^$9!#2 $^$?$O 3 $NCM$K$h$C$F%0%i%U$N304Q$r2~A1$G$-$k>l9g$b$"$k$G$7$g$&!#

```
gnuplot*borderWidth: 2
gnuplot*axisWidth: 0
gnuplot*line1Width: 0
gnuplot*line2Width: 0
gnuplot*line3Width: 0
gnuplot*line4Width: 0
gnuplot*line5Width: 0
gnuplot*line6Width: 0
gnuplot*line7Width: 0
gnuplot*line8Width: 0
```

**gnuplot** $O@~IA2h$G;HMQ$9$kE@@~$N7A<0$N@_DjMQ$K0J2<$N%j%=!<%9$r;2>H$7$^$9!#0 $O<B@~$r0UL#$7$^$9!#2 7e$N 10 ?J?t **jk** (**j** $H **k** $O 1 $+$i 9 $^$G$NCM) $O!"**j** 8D$N%T%/%;%k$NIA2h$K **k** 8D$N6uGr$N%T%/%;%k$,B3$/%Q%?!<%s$N7+$jJV$7$+$i$J$kE@@~$r0UL#$7$^$9!#Nc$($P '16' $O 1 8D$N%T%/%;%k$N8e$K 6 $D$N6uGr$,B3$/%Q%?!<

%s$NE@@~$K$J$j$^$9!#$5$i$K!"4 7e$N10 ?J?t$G$h$j>\:Y$J%T%/%;%k$H6uGr$NNs$N%Q%?!<%s$r;XDj$G$-$^$9!#Nc $($P!"'4441' $O4 $D$N%T%/%;%k!"4 $D$N6uGr!"4 $D$N%T%/%;%k!"1 $D$N6uGr$N%Q%?!<%s$r0UL#$7$^$9!#0J2<$N %G%U%)%k%H$N%j%=!<%9CM$O!"Gr9u%G%#%9%W%l%$!"$"$k$$$O%+%i!<$dGr9u3,D4 (grayscale) %G%#%9%W%l%$>e$NGr9u IA2h$K$*$1$kCM$G$9!#%+%i!<%G%#%9%W%l%$$G$O$=$l$i$N%G%U%)%k%H$NCM$O$[$H$s$I0 (<B@~) $G!"**axisDashes** $N$_$,%G%U%)%k%H$G'16' $NE@@~$H$J$C$F$$$^$9!#

```
gnuplot*borderDashes: 0
gnuplot*axisDashes: 16
gnuplot*line1Dashes: 0
gnuplot*line2Dashes: 42
gnuplot*line3Dashes: 13
gnuplot*line4Dashes: 44
gnuplot*line5Dashes: 15
gnuplot*line6Dashes: 4441
gnuplot*line7Dashes: 42
gnuplot*line8Dashes: 13
```

## Caca

[;n83CJ3,] **caca** =PNO7A<0$O!"**libcaca** $r;H$C$F%"%9%-!<J8;z$K$h$k%0%i%U$rIA$/!"$[$\8d3ZE*$J=PNO%b!<%I$G $9!#**dumb** =PNO7A<0$HHf$Y$k$H!"$3$A$i$O?'!"H"$NE I$jDY$7!"2hA|!"J8;zNs$N2sE>!"B?3Q7A$NE I$jDY$7!"%^%& %9A`:n$r%5%]!<%H$7$F$$$^$9!#

=q<0:

```
set terminal caca {{driver | format} {default | <driver> | list}}
                  {color | monochrome}
                  {{no}inverted}
                  {enhanced | noenhanced}
                  {background <rgb color>}
                  {title "<plot window title>"}
                  {size <width>,<height>}
                  {charset ascii|blocks|unicode}
```

%*%W%7%g%s **driver** ($^$?$O **format**) $O!"I=<(%I%i%$%P$H$7$F **libcaca** $rA*Br$9$k$+!"$^$?$O=PNO%I%i%$%P$r A*Br$7$^$9!#**default** $O!"**libcaca** $K$=$N4D6-$N%G%U%)%k%H$N%G%#%9%W%l%$%I%i%$%P$rA*Br$5$;$^$9!#%G%U%) %k%H$N%I%i%$%P$O!"**gnuplot** $N5/F0A0$K4D6-JQ?t CACA_DRIVER $r@_Dj$7$F$*$/$3$H$GJQ99$G$-$^$9!#**set term caca driver list** $r;HMQ$9$k$H!"%5%]!<%H$9$k=PNO%b!<%I$N0lMw$rI=<($7$^$9!#

%*%W%7%g%s **color** $H **monochrome** $O!"%+%i!<$+Gr9u=PNO$rA*Br$7$^$9!#$3$l$O!"@~$N5-9f$bJQ99$9$k$3$H $KCm0U$7$F$/$@$5$$!#%G%U%)%k%H$NGrGX7J$r9uGX7J$K$7$?$$>l9g$O!"%*%W%7%g%s **inverted** $r;H$C$F$/$@$5$$!# $3$l$O!"%G%U%)%k%H$N@~<o$N9u$rGr$K$bJQ$($^$9!#

3HD%J8;zNs=hM}$O!"%*%W%7%g%s **enhanced** $r;H$&$3$H$GM-8z$K$J$j$^$9!#0J2<;2>H **enhanced text**!#

=PNO%&%#%s%I%&$N%?%$%H%k$O!"**libcaca** %I%i%$%P$,%5%]!<%H$7$F$$$l$P!"%*%W%7%g%s **title** $GJQ99$G$-$^$9!#

%*%W%7%g%s **size** $O!"%-%c%s%P%9$N%5%$%:$rJ8;zC10L$GA*Br$7$^$9!#%G%U%)%k%H$O 80 x 25 $G$9!#%P%C%/%(%s %I$,%5%]!<%H$7$F$$$l$P!"%-%c%s%P%9%5%$%:$O!"8=:_$N%&%#%s%I%&/%?!<%_%J%k$N%5%$%:$K<+F0E*$K9g$$$^$9!# "x11" $H"gl" %&%#%s%I%&$N%G%U%)%k%H$N%5%$%:$O!"4D6-JQ?t CACA_GEOMETRY $G@)8f$G$-$^$9!#"win32" %I%i%$%P$G$N%&%#%s%I%&$N0LCV!&%5%$%:>pJs$O!"%"%W%j%1!<%7%g%s%a%K%e!<$G@)8f!"5Z$S91>oE*$JJQ99$,9T$( $^$9!#

%*%W%7%g%s **charset** $O!"6J@~!"E@!"B?3Q7A$dD9J}7A$NE I$jDY$7!"2hA|$NCf4V?'I=8=$J$I$G;H$o$l$kJ8;z=89g$rA* Br$7$^$9!#%P%C%/%(%s%I$H%?!<%_%J%k$H%U%)%s%H$NAH$_9g$o$;$K$h$C$F$O!"**blocks** $+ **unicode** $NJ8;z=89g$O %5%]!<%H$7$J$$2DG=@-$b$"$k$3$H$KCm0U$7$F$/$@$5$$!#F$K Windows $G$O!""Lucida Console" $d"Consolas" $N$h$&$JHs%i%9%?%U%)%s%H$N;HMQ$r4+$a$^$9!#

caca =PNO7A<0$O!"%^%&%9A`:n$r%5%]!<%H$7$F$$$^$9!#**libcaca** $N$$/$D$+$N%P%C%/%(%s%I (Nc$($P slang $d ncurses) $O%^%&%9%/%j%C%/$7$?%^%&%9$N0LCV$7$+9 9?7$7$J$$$3$H$KCm0U$7$F$/$@$5$$!#=$>~%-!< (Ctrl, Alt, Shift) $O!"**libcaca** $G$O%5%]!<%H$7$F$$$J$$$N$G!"MxMQ$G$-$^$;$s!#

**caca** =PNO7A<0$N%G%U%)%k%H$N **encoding** $O utf8 $G$9!#cp437 **encoding** $b%5%]!<%H$7$F$$$^$9!#

**libcaca** $N%5%]!<%H$9$k?'$N?t$O!"%P%C%/%(%s%I$K$h$j0[$J$j$^$9!#$?$$$F$$$N%P%C%/%(%s%I$O!"16 ?'$NA07J?'$H 16 ?'$NGX7J?'$N$_$r%5%]!<%H$7$F$$$^$9$,!"Nc$($P "x11" %P%C%/%(%s%I$O!"Truecolor $r%5%]!<%H$7$F$$$^$9!#

=PNO7A<0$H **libcaca** %P%C%/%(%s%I$K$h$C$F$O!"GX7J?' 8 ?'$7$+%5%]!<%H$5$J$$>l9g$b$"$j$^$9!#L@?' (GX7J?'$NCf$G:G$b=EMW) $O!"J8;z$r51$+$;$F$$$k$H2r<a$5$l$^$9!#$3$N>l9g!"**background rgb "gray"** $r;HMQ$7$F$_$F$/$@$5$$!#

0J2<$N libcaca Web %5%$%H http://caca.zoy.org/wiki/libcaca

$*$h$S libcaca 4D6-JQ?t$K4X$9$k@bL@ http://caca.zoy.org/doxygen/libcaca/libcaca-env.html

$b;2>H$7$F$_$F$/$@$5$$!#

### Caca limitations and bugs

**caca** =PNO7A<0$K$O!"4{CN$N%P%0$H@)8B$,$"$j$^$9:

Unicode $N%5%]!<%H$O!"%I%i%$%P$H=PNO7A<00MB8$G$9!#"x11" %P%C%/%(%s%I$O libcaca version 0.99.beta17 $+$i unicode $r%5%]!<%H$7$F$$$^$9$,!"**libcaca** < 0.99.beta20 $G$N%P%0$N$?$a!""slang" %I%i%$%P$O unicode $r%5%]!<%H$7$F$$$^$;$s!#**libcaca** < 0.99.beta19 $K$O!"IT@5$J8 %S%C%HNs$rM?$($k$HL58B%k!<%W$r0z$-5/$3$9$H$$$&%P%0$,$"$k$3$H$KCm0U$7$F$/$@$5$$!#

L@$k$$GX7J?'$OE@LG$9$k$3$H$,$"$j$^$9!#

%^%&%9A`:n$G$O=$>~%-!<$O%5%]!<%H$7$^$;$s!#0J2<;2>H: **term caca**

3HD%J8;zNs$N2sE>!"$*$h$SF)L@2=$O%5%]!<%H$7$F$$$^$;$s!#**size** %*%W%7%g%s$O!"%*%s%9%/%j!<%s%G%#%9%W%l%$$G$O9MN8$5$l$^$;$s!#

K^Nc (key) $NH"$r@5$7$/IA$/$K$O!"0J2<$N$h$&$K$7$F$/$@$5$$:

```
set key width 1 height 1
```

3HD%J8;zNs$N0LCV9g$o$;$O!"UTF-8 J8;zNs$,4^$^$l$F$$$k>l9g$O$&$^$/$$$-$^$;$s!#Windows $N%3%s%=!<%k%&%#%s%I%&$N%j%5%$%:$O!"libcaca $N%P%0$N$?$a@5$7$/5!G=$7$^$;$s!#%?%$%H%k9T$N>e$G "X" $r%/%j%C%/$7$F%?!<%_%J%k%&%#%s%I%&$rJD$8$k5!G=$O wgnuplot $r=*N;$5$;$F$7$^$$$^$9$N$G!"%&%#%s%I%&$rJD$8$k$K$O "q" $rBG$C$F$/$@$5$$!#

## Cairolatex

=PNO7A<0 **cairolatex** $O!"cairo $H pango $NJd=u%i%$%V%i%j$r;H$C$F!"EPS (Encapsulated PostScript) $+ PDF =PNO$r@8@.$7$^$9$,!"J8;zNs=PNO$K$O!"=PNO7A<0 **epslatex** $HF1$8$d$jJ}$G LaTeX $r;HMQ$7$^$9!#

=q<0:

```
set terminal cairolatex
                  {eps | pdf}
                  {standalone | input}
                  {blacktext | colortext | colourtext}
                  {header <header> | noheader}
                  {mono|color}
                  {{no}transparent} {{no}crop} {background <rgbcolor>}
                  {font <font>} {fontscale <scale>}
                  {linewidth <lw>} {rounded|butt|square} {dashlength <dl>}
                  {size <XX>{unit},<YY>{unit}}
```

cairolatex =PNO7A<0$O!"epscairo =PNO7A<0 (**termnal epscairo**) $d pdfcairo =PNO7A<0 (**terminal pdfcairo**) $HF1Ey$N%0%i%U$r=PNO$7$^$9$,!"%F%-%9%HJ8;zNs$O%0%i%U$NCf$KF~$l$k$N$G$O$J$/!"LaTeX $KEO$7$^$9!#0J2<$G?($l$J$$%*%W%7%g%s$K$D$$$F$O!"0J2<;2>H: **pdfcairo (p. 238)**!#

**eps** $H **pdf** $O!"%0%i%U=PNO$N7A<0$rA*Br$7$^$9!#latex/dvips MQ$K$O **eps** $r!"pdflatex MQ$K$O **pdf** $r;HMQ$7$F$/$@$5$$!#

**blacktext** $O!"%+%i!<%b!<%I$G$b$9$Y$F$NJ8;zNs$r9u$G=q$/$h$&$K$7$^$9!#

**cairolatex** =PNO%I%i%$%P$O!"J8;zNs$N0LCV$NFCJL$J@)8fJ}K!$rDs6!$7$^$9: (a) '{' $G;O$^$k$9$Y$F$NJ8;zNs$O!"}' $b$=$NJ8;zNs$N:G8e$KI,MW$G$9$,!"$=$NJ8;zNsA4BN$r LaTeX $G2#$K$b=D$K$b%;%s%?%j%s%0$7$^$9!#(b) '[' $G;O$^$kJ8;zNs$O!"$=$N<!$K0LCV;XDjJ8;z (t,b,l,r,c $N$&$A2 $D$^$G)!"]{'!"BP>]J8;zNs!"$HB3$-:G8e$K'}' $GJD$8$^$9$,!"$3$NJ8;zNs$O!"LaTeX $, LR-box $H$7$F=hM}$G$-$k$b$N$J$i$J$s$G$b9=$$$^$;$s!#0LCV9g$o$;$r40A4$K9T$&$K$O!"\rule{}{} $bM-MQ$G$7$g$&!#0J2<$b;2>H: **pslatex (p. 245)**!#J#?t9T$KEO$k%i%Y%k$r@8@.$9$k>l9g!"\shortstack $r;HMQ$7$F$/$@$5$$!#Nc:

```
set ylabel '[r]{\shortstack{first line \\ second line}}'
```

%3%^%s%I **set label** $N%*%W%7%g%s **back** $O!"B>$N=PNO7A<0$H$O$d$d0[$J$kJ}K!$G=hM}$7$^$9!#**back** $r;HMQ$7$?%i%Y%k$O!"B>$N$9$Y$F$NIA2hMWAG$N8e$m$K0u;z$7!"**front** $r;HMQ$7$?%i%Y%k$O!"B>$N$9$Y$F$N>e$K0u;z$7$^$9!#

$3$N%I%i%$%P$O2 $D$N0[$J$k%U%!%$%k$r:n@.$7$^$9!#0l$D$O?^$N eps $+$^$?$O pdf ItJ,$G!"$b$&0l$D$O LaTeX ItJ,$G$9!#$=$N LaTeX %U%!%$%k$NL>A0$O!"%3%^%s%I **set output** $N$b$N$r;HMQ$7!"eps/pdf %U%!%$%k$NL>A0$O!"$=$N3HD%;R(DL>o$O '.tex') $r '.eps' $+ '.pdf' $KCV$-49$($?$b$N$r;HMQ$7$^$9!#=PNO%U%!%$%k$r;XDj$7$J$+$C$?>l9g$O!"LaTeX =PNO$O$7$^$;$s!#**multiplot** %b!<%I0J30$G$O!"<!$N plot $r9T$&A0$K=PNO%U%!%$%k$rJD$8$k$N$rK:$l$J$$$G$/$@$5$$!#

$3$N2hA|$r$"$J$?$N LaTeX J8=q$K<h$j9~$`$K$O!"\input{filename}' $r;HMQ$7$F$/$@$5$$!#.eps' $d'.pdf' %U%!%$%k$O!"\includegraphics{...} %3%^%s%I$G<h$j9~$`$N$G!"LaTeX J8=q$N%W%j%"%s%V%k$K \usepackage{graphicx} $rF~$l$kI,MW$,$"$j$^$9!#?'IU$-$NJ8;z (%*%W%7%g%s **colourtext**) $r;HMQ$9$k>l9g$O!"%W%j%"%s%V%k$K \usepackage{color} $bF~$l$kI,MW$,$"$j$^$9!#

%U%)%s%HA*Br$K4X$9$k5sF0$O!"%X%C%@!<%b!<%I$K0MB8$7$^$9!#$$$:$l$N>l9g$G$b!"M?$($i$l$?%U%)%s%H%5%$%:$O E,@Z$JBg$-$5$r7W;;$9$k$N$K;H$o$l$^$9!#**standalone** %b!<%I$r;H$C$F$$$J$$>l9g$O!"$=$l$rF I$_$3$s$@$H$3$m $G<B:]$K LaTeX $,;HMQ$7$F$$$k%U%)%s%H$H%U%)%s%H%5%$%:$,;H$o$l$k$N$G!"%U%)%s%H$rJQ99$9$k$K$O LaTeX $N%3%^%s%I$r;HMQ$7$F$/$@$5$$!#LaTeX J8=q$NJ}$G 12pt $N%U%)%s%H%5%$%:$r;H$C$F$$$l$P!"%*%W%7%g%s$H$7$F '", 12"' $r;XDj$7$F$/$@$5$$!#%U%)%s%HL>$OL5;k$5$l$^$9!#'standalone' $N>l9g$O!"M?$($i$l$?%U%)%s%H$H%U%)%s%H%5%$%:$r;HMQ$7$^$9!#>\:Y$O0J2<$r;2>H$7$F$/$@$5$$!#

J8;zNs$r?'IU$1$7$F0u;z$9$k$+$I$&$+$O!"TeX $N%V!<%kJQ?t \ifGPcolor $H \ifGPblacktext $G@)8f$G$-$^$9!# \ifGPcolor $, true $G \ifGPblacktext $, false $N$H$-$N$_J8;zNs$,?'IU$1$5$l$^$9!#$3$l$i$NJQ99$O!"@8@.$5$l$?TeX %U%!%$%kC f$G9T$&$+!"$^$?$OBg0hE*$K$"$J$?$N TeX %U%!%$%k$N%W%j%"%s%V%k$G!"Nc$($P0J2<$N$h$&$K$7$F@_Dj$G$-$^$9:

```
\newif\ifGPblacktext
\GPblacktexttrue
```

6I=jE*$J@_Dj$O!"Bg0hE*$JCM$,$J$$>l9g$K$N$_8zNO$r;}$A$^$9!#

=PNO7A<0 cairolatex $r;H$&>l9g$O!"%3%^%s%I **set output** $G TeX %U%!%$%k@_Dj$9$k:]$K%U%!%$%k$N3HD%;R(DL>o$O ",tex") $r$D$1$F$/$@$5$$!#%0%i%U$N%U%!%$%kL>$O!"$=$N3HD%;R$rCV$-$+$($k$3$H$G:n$i$l$^$9!#

**standalone** %b!<%I$r;H$&>l9g!"LaTeX %U%!%$%k$K40A4$J LaTeX $N%X%C%@$,DI2C$5$l!"%0%i%U%U%!%$%k$N%U%!%$%kL>$K$O "-inc" $,DI2C$5$l$^$9!#**standalone** %b!<%I$O!"dvips, pdfTeX, VTeX $r;H$&>l9g$K@5$7$$%5%$%:$N=PNO$r:n$k TeX %U%!%$%k$r@8@.$7$^$9!#%G%U%)%k%H$G$O **input** $G!"$3$l$O LaTeX J8=q$+$i \input %3%^%s%I$G<h$j9~$^$l$kI,MW$,$"$k%U%!%$%k$r@8@.$7$^$9!#

"" $d "default" 0J30$N%U%)%s%H$rM?$($?>l9g!"$=$l$O LaTeX $N%U%)%s%HL>$G$"$k$H$_$J$5$l$^$9!#$=$l$O ',' 6h@Z$j$G:GBg 3 $D$NItJ,$+$i$J$k!"'fontname,fontseries,fontshape' $N7A<0$G$9!#%G%U%)%k%H$N fontshape $d fontseries $r;H$$$?$$>l9g$O!"$=$l$i$O>JN,$G$-$^$9!#$h$C$F!"%U%)%s%HL>$N<B:]$N=q<0$O!"'{fontname}{,fontseries}{,fontshape}' $H$J$j$^$9!#(LuCm $h$j gnuplot Iw$K8@$($P '{<fontname>}{,{<fontseries>}{,<fontshape>}}') L>A0$N3FItJ,$N;XDjK!$O!"LaTeX $N%U%)%s%H7O$N47=,$K=>$&I,MW$,$"$j$^$9!#%U%)%s%HL> (fontname) $O 3 $+$i 4 J8;z$ND9$5$G!"0J2<$N$h$&$K$J$C$F$$$^$9: :G=i$NJ8;z$O%U%)%s%H$N6!5k<T!"<!$N 2 $D$NJ8;z$O%U%)%s%HL>MQ!"%*%W%7%g%s$H$7$FFCJL$J%U%)%s%HMQ$K 1 J8;zDI2C$G$-$^$9!#Nc$($P!"'j' $O8E$$%9%?%$%k$N?t;zMQ$N%U%)%s%H!"'x' $O%(%-%9%Q!<%H%U%)%s%HMQ$G$9!#B?$/$N%U%)%s%HL>$,0J2<$K5-=R$5$l$F$$$^$9: http://www.tug.org/fontname/fontname.pdf

Nc$($P!"'cmr' $O Computer Modern Roman $r!"'ptm' $O Times-Roman, 'phv' $O Helvetica $r0UL#$7$F$$$^$9!#font series $O!"%0%j%U$NB@$5$rI=$7!"B?$/$N>l9g$O!"'m' $,I8=`("medium")!"'bx' $+'b' $,B@;z(bold) $N%U%)%s%H$r0UL#$7$^$9!#font shape $O!"0lHIE*$K$O 'n' $,N)BN(upright)!"'it' $,%$%?%j%C%/(italic)!"'sl' $,<PBN(slanted)!"'sc' $,%9%b!<%k%-%c%T%?%k(small caps) $r0UL#$7$^$9!#0[$J$k series $d shapes $rDs6!$9$k%U%)%s%H$b$"$j$^$9!#

Nc:

Times-Roman $N%\!<%k%IBN(<~$j$NJ8;zNs$HF1$87A>u) $r;H$&$K$O:

```
set terminal cairolatex font 'ptm,bx'
```

Helvetica, %\!<%k%IBN!"%$%?%j%C%/$r;H$&$K$O:

```
set terminal cairolatex font 'phv,bx,it'
```

<~$j$HF1$8$G<PBN$N7A>u$N%U%)%s%H$r;H$&$K$O:

```
set terminal cairolatex font ',,sl'
```

%9%b!<%k%-%c%T%?%k$r;H$&$K$O

```
set terminal cairolatex font ',,sc'
```

$3$NJ}K!$G$O!"%F%-%9%H%U%)%s%H$@$1$,JQ99$5$l$^$9!#?t<0%U%)%s%H$bJQ99$7$?$$>l9g$O!"%U%!%$%k "gnuplot.cfg" $+!"$^$?$OJ2<$G@bL@$9$k%*%W%7%g%s **header** $r;H$&I,MW$,$"$j$^$9!#

**standalone** %b!<%I$G$O!"%U%)%s%H%5%$%:$O%3%^%s%I **set terminal** $G;XDj$7$?%U%)%s%H%5%$%:$r<h$j$^$9!#;XDj$7$?%U%)%s%H%5%$%:$r;H$&$?$a$K$O%U%!%$%k "size<size>.clo" $, LaTeX $N8!:w%Q%9$K$"$kI,MW$,$"$j$^$9!#%G%U%)%k%H$G$O 10pt, 11pt, 12pt $r%5%]!<%H$7$F$$$^$9!#%Q%C%1!<%8 "extsizes" $,%$%s%9%H!<%k$5$l$F$$$l$P!"8pt, 9pt, 14pt, 17pt, 20pt $bDI2C$5$l$^$9!#

%*%W%7%g%s **header** $O0l$D$NJ8;zNs$r0z?t$H$7$F<h$j!"$=$NJ8;zNs$r@8@.$9$k LaTeX %U%!%$%k$K=q$-=P$7$^$9!#**standalone** %b!<%I$G$O!"$=$l$O%W%j%"%s%V%k$N \begin{document} $ND>A0$K=q$-$^$9$,!"**input** %b!<%I$G$O!"$=$l$O%0%i%U$K4X$9$k$9$Y$F$N@_Dj$r6I=j2=$9$k$?$a$N \begingroup %3%^%s%I$N$ND>8e$K=q$-$^$9!#

Nc:

T1 %U%)%s%H%(%s%3!<%G%#%s%0$r;H$$!"%F%-%9%H%U%)%s%H$H?t<0%U%)%s%H$r Times-Roman $K!"sans-serif %U%)%s%H$r Helvetica $KJQ$($k$K$O:

```
set terminal cairolatex standalone header \
"\\usepackage[T1]{fontenc}\n\\usepackage{mathptmx}\n\\usepackage{helvet}"
```

%0%i%UFb$G$OB@;z (bold) $r;H$&$,!"%0%i%U30$N%F%-%9%H$O$=$&$7$J$$:

```
set terminal cairolatex input header "\\bfseries"
```

LaTeX $,%U%!%$%k "gnuplot.cfg" $r8+$D$1$k$H!"**standalone** %b!<%I$G$O$=$l$r%W%j%"%s%V%k$K<h$j9~$_$^$9!#$3$l$O!"$5$i$K@_Dj$rDI2C$9$k$N$K;H$($^$9!#Nc: J8=q$N%U%)%s%H$r!"?t<0%U%)%s%H ("mathptmx.sty" $,=hM}) $b9g$o$;$F Times-Roman, Helvetica, Courier $K$9$k$K$O:

```
\usepackage{mathptmx}
\usepackage[scaled=0.92]{helvet}
\usepackage{courier}
```

%U%!%$%k "gnuplot.cfg" $O!"%3%^%s%I **header** $G@_Dj$9$k%X%C%@!<pJs$h$j$bA0$KFI$_9~$_$^$9$N$G!""gnuplot.cfg" $G@_Dj$9$k$b$N$r **header** $r;H$C$F>e=q$-$9$k$3$H$,$G$-$^$9!#

## Canvas

=PNO7A<0 **canvas** $O!"HTML5 $N canvas MWAG>e$KIA2h$9$k javascript %3%^%s%I$N=89g$r@8@.$7$^$9!#=q<0:

```
set terminal canvas {size <xsize>, <ysize>} {background <rgb_color>}
                    {font {<fontname>}{,<fontsize>}} | {fsize <fontsize>}
                    {{no}enhanced} {linewidth <lw>}
                    {rounded | butt | square}
                    {dashlength <dl>}
                    {standalone {mousing} | name '<funcname>'}
                    {jsdir 'URL/for/javascripts'}
                    {title '<some string>'}
```

<xsize> $H <ysize> $OIA2hNN0h$N%T%/%;%kC10L$G$N%5%$%:$r@_Dj$7$^$9!#standalone %b!<%I$G$N%G%U%)%k%H$N%5%$%:$O!"600x400 %T%/%;%k$G$9!#%G%U%)%k%H$N%U%)%s%H%5%$%:$O 10 $G$9!#

Cm: %U%!%$%k canvastext.js $GDs6!$7$F$$$k Hershey simplex Roman %U%)%s%H$N%"%9%-!<ItJ,$N%U%)%s%H0l$D$@$1$,MxMQ$G$-$^$9!#$3$l$O!"%U%!%$%k canvasmath.js $GCV$-49$($k$3$H$b$G$-!"$=$3$K$O UTF-8 %(%s%3!<%I$5$l$?Hershey simplex Greek $H math symbols $b4^$^$l$F$$$^$9!#B>$N=PNO7A<0$K9g$o$;$F!"**font "name,size"** $N7A<0$b;H$($k$h$&$K$J$C$F$$$^$9!#:#$N$H$3$m **name** $N%U%)%s%HL>ItJ,$OL5;k$5$l$^$9$,!"$=$N$&$A$K%V%i%&%6$,L>A0IU$-%U%)%s%H$r%5%]!<%H$7$@$9$G$7$g$&!#

%G%U%)%k%H$N **standalone** %b!<%I$O!"HTML 5 $N canvas MWAG$r;HMQ$7$F%0%i%U$rIA2h$9$k$h$&$J javascript %3!<%I$r4^$` HTML %Z!<%8$r@8@.$7$^$9!#$=$N HTML %Z!<%8$O!"2 $D$NI,MW$J javascript %U%!%$%k 'canvastext.js'!"'gnuplot_common.js' $K%j%s%/$7$^$9!#E@@~$r%5%]!<%H$9$k$?$a$K$O$5$i$KDI2C%U%!%$%k 'gnuplot_dashedlines.js' $,I,MW$G$9!#%G%U%)%k%H$G$O$=$l$i$O%m!<%+%k%U%!%$%k$X$N%j%s%/$G!"Unix 8_4 9$N%7%9%F%`$G$ODL>o$O$=$l$i%G%#%l%/%H%j /usr/local/share/gnuplot/<version>/js $K$"$j$^$9!#B>$N4D6-$K$D$$$F$O!"%$%s%9%H!<%k$K4X$9$kCm0U$r;2>H$7$F$/$@$5$$!#$3$N@_Dj$O!"%*%W%7%g%s **jsdir** $KJL$N%m!<%+%k%G%#%l%/%H%j!"$"$k$$$O0lHLE*$J URL $r;XDj$9$k$3$H$GJQ99$G$-$^$9!#%0%i%U$r%j%b!<%H%/%i%$%"%s%H$N%^%7%s$G8+$l$k$h$&$K$9$k>l9g$O!"DL>o$O8e<T$N@_Dj$,E,@Z$G$7$g$&!#

canvas =PNO7A<0$G@8@.$5$l$kIA2h$O$9$Y$F%^%&%9A`:n2DG=$G$9!#%-!<%o!<%I **mousing** $rDI2C$9$k$H!"**standalone** %b!<%I$N%0%i%U$N2<$K%^%&%9%H%i%C%-%s%0%\%C%/%9$rD$1$^$9!#$3$l$O!"**canvastext.js** $,CV$+$l$F$$$k$N$HF1$8%m!<%+%k%G%#%l%/%H%j!"$^$?$O URL Fb$N!"'gnuplot_mouse.js' $H$$$&javascript %U%!%$%k$X$N%j%s%/$H 'gnuplot_mouse.css' $H$$$&%^%&%9%\%C%/%9$K4X$9$k%9%?%$%k%7!<%H$bDI2C$7$^$9!#

%*%W%7%g%s **name** $O!"javascript $N$_$r4^$`%U%!%$%k$r0l$D@8@.$7$^$9!#$=$l$,4^$` javascript 4X?t$H!"$=$l$,IA2h$9$k canvas MWAG$N id $NN>J}$O!"0J2<$NJ8;zNs%Q%i%a!<%?$+$i<h$i$l$^$9!#Nc$($P0J2<$N%3%^%s%I

```
set term canvas name 'fishplot'
set output 'fishplot.js'
```

$O!"javascript 4X?t fishplot() $r4^$`%U%!%$%k$r@8@.$7!"$=$N4X?t$O%0%i%U$r id=fishplot $N canvas >e$KIA2h$7$^$9!#$3$N javascript 4X?t$r8F$S=P$9 HTML %Z!<%8$O!">e$G@bL@$7$?canvastext.js $bFI$_9~$^$J$1$l$P$$$1$^$;$s!#>e$N$h$&$K@8@.$7$?!"$3$N fishplot $r<h$j$3$`:G>.$N HTML %U%!%$%k$O0J2<$N$h$&$K$J$j$^$9:

```
<html>
<head>
    <script src="canvastext.js"></script>
    <script src="gnuplot_common.js"></script>
</head>
<body onload="fishplot();">
    <script src="fishplot.js"></script>
    <canvas id="fishplot" width=600 height=400>
        <div id="err_msg">No support for HTML 5 canvas element</div>
    </canvas>
</body>
</html>
```

$3$N%-%c%s%P%9>e$KIA$+$l$k$=$l$>$l$N%0%i%U$NL>A0$O!"fishplot_plot_1, fishplot_plot_2 Ey$H$J$j$^$9!#3 0It $N javascript %k!<%A%s$G$=$l$i$r;2>H$9$k$3$H$b$G$-$^$9!#Nc: gnuplot.toggle_visibility("fishplot_plot_2")

## Cgm

**cgm** %I%i%$%P$O CGM =PNO (Computer Graphics Metafile Version 1) $r@8@.$7$^$9!#$3$N%U%!%$%k%U%)!<%^%C%H$O ANSI 5,3J=q X3.122-1986 "Computer Graphics - Metafile for the Storage and Transfer of Picture Description Information" $GDj5A$5$l$F$$$k$b$N$N0lItJ,$G$9!#

=q<0:

```
     set terminal cgm {color | monochrome} {solid | dashed} {{no}rotate}
                      {<mode>} {width <plot_width>} {linewidth <line_width>}
                      {font "<fontname>,<fontsize>"}
                      {background <rgb_color>}
      [deprecated]    {<color0> <color1> <color2> ...}
```

**solid** $OA4$F$N6J@~$r<B@~$GIA$-!"$I$s$JE@@~%Q%?!<%s$bEI$j$D$V$7$^$9; <mode> $O **landscape**, **portrait**, **default** $N$$$:$l$+; <plot_width> $O%]%$%s%HC10L$G$N%0%i%U$N2>Dj$5$l$F$$$kI}; <line_width> $O%]%$%s%H

C10L$G$N@~I}(%G%U%)%k%H$O1); <fontname> $O%U%)%s%H$NL>A0(0J2<$N%U%)%s%H0lMw;2>H); $=$7$F<fontsize> $O%]%$%s%HC10L$G$N%U%)%s%H$N%5%$%:(%G%U%)%k%H$O12) $G$9!#

:G=i$N6 $D$N%*%W%7%g%s$O$I$N=gHV$G;XDj$7$F$b9=$$$^$;$s!#**default** $rA*Br$9$k$H!"A4$F$N%*%W%7%g%s$r$=$N%G%U%)%k%H$NCM$K$7$^$9!#

@~$N?'$r **set term** %3%^%s%I$G@_Dj$9$k;EAH$_$O!":#$OHs?d>)$G$9!#Be$o$j$K!"GX7J?'$OJ,N%$5$l$?%-!<%o!<%I background $G!"@~$N?'$O **set linetype** $G@_Dj$9$Y$-$G$7$g$&!#$3$NHs?d>)$N;EAH$_$G$O?'$O'xrrggbb' $N7A<0$G<u$1$D$1$^$9$,!"x $OJ8;z'x' $=$N$b$N!"'rrggbb' $O16 ?J?t$G$N@V!"NP!"@D$N@.J,$G$9!#:G=i$N?'$rGX7J?'$H$7$F;H$$!"$=$N8e$KB3$/?';XDj$r=g<!@~$N?'$H$H$7$F3d$jEv$F$F$$$^$7$?!#

Nc:

```
     set terminal cgm landscape color rotate dashed width 432 \
                    linewidth 1  'Helvetica Bold' 12       # %G%U%)%k%H
     set terminal cgm linewidth 2  14  # $d$d9-$$@~$H$d$dBg$-$$%U%)%s%H
     set terminal cgm portrait "Times Italic" 12
     set terminal cgm color solid    # LIE]$JE@@~$J$I>C$($F$7$^$(!
```

## CGM $N%U%)%s%H (font)

CGM (Computer Graphics Metafile) %U%!%$%k$N:G=i$NItJ,!"%a%?%U%!%$%k$N5-=RItJ,$K$O!"%U%)%s%H%j%9%H (font table) $,4^$^$l$F$$$^$9!#2hA|$NK\BNIt$G$O!"%U%)%s%H$O$3$N%j%9%H$K$"$kHV9f$G;XDj$5$l$^$9!#%G%U%)%k%H$G$O$3$N%I%i%$%P$O0J2<$N 35 8D$N%U%)%s%H%j%9%H$r@8@.$7!"$5$i$K$3$N%j%9%H$N **Helvetica**, **Times**, **Courier** $N3F%U%)%s%H$N **italic** $r **oblique** $GCV$-49$($?$b$N!"$*$h$S$=$N5U$K$h$k6 $D$NDI2C$N%U%)%s%H$,4^$^$l$^$9(Microsoft Office $H Corel Draw CGM $N import %U%#%k%?$O **italic** $H **oblique** $rF1$8$b$N$H$7$F07$&$+$i$G$9)!#

| CGM fonts | |
|---|---|
| Helvetica | Hershey/Cartographic_Roman |
| Helvetica Bold | Hershey/Cartographic_Greek |
| Helvetica Oblique | Hershey/Simplex_Roman |
| Helvetica Bold Oblique | Hershey/Simplex_Greek |
| Times Roman | Hershey/Simplex_Script |
| Times Bold | Hershey/Complex_Roman |
| Times Italic | Hershey/Complex_Greek |
| Times Bold Italic | Hershey/Complex_Italic |
| Courier | Hershey/Complex_Cyrillic |
| Courier Bold | Hershey/Duplex_Roman |
| Courier Oblique | Hershey/Triplex_Roman |
| Courier Bold Oblique | Hershey/Triplex_Italic |
| Symbol | Hershey/Gothic_German |
| ZapfDingbats | Hershey/Gothic_English |
| Script | Hershey/Gothic_Italian |
| 15 | Hershey/Symbol_Set_1 |
| | Hershey/Symbol_Set_2 |
| | Hershey/Symbol_Math |

$3$l$i$N%U%)%s%H$N:G=i$N13 8D$O WebCGM $GMW5a$5$l$F$$$k$b$N$G$9!#Microsoft Office $N CGM import %U%#%k%?$O$=$N13 8D$NI8=`%U%)%s%H$H'ZapfDingbats' $H 'Script' $r%5%]!<%H$7$F$$$^$9!#$7$+$7!"$=$N%9%/%j%W%H (script) %U%)%s%H$O '15' $H$$$&L>A0$G$7$+%"%/%;%9$G$-$^$;$s!#Microsoft $N import %U%#%k%?$N font $NCV$-49$($K4X$9$k$h$j>\$7$$>pJs$K$D$$$F$O!"

```
 C:\Program Files\Microsoft Office\Office\Cgmimp32.hlp
```

$N%X%k%W%U%!%$%k!"$^$?$O

```
 C:\Program Files\Common Files\Microsoft Shared\Grphflt\Cgmimp32.cfg
```

$N@_Dj%U%!%$%k$J$I$r%A%'%C%/$7$F$/$@$5$$!#

**set term** %3%^%s%I$G%G%U%)%k%H$N%U%)%s%H%j%9%H$K$J$$%U%)%s%HL>$r;XD$j$9$k$3$H$b2DG=$G$9!#$=$N>l9g!"$=$N;XD$j$7$?%U%)%s%H$,:G=i$K8=$o$l$k?7$7$$%U%)%s%H%j%9%H$,:n$i$l$^$9!#$=$N%U%)%s%HL>$K4X$7$F!"%9%Z%k!"C18l$N@hF,$NBgJ8;z2=$d$I$3$K%9%Z!<%9$,F~$k$+$J$I$,!":n$i$l$k CGM %U%!%$%k$rFI$`%"%W%j%1!<%7%g%s$K$H$C$FE,@Z$J$b$N$G$"$k$+$r$A$c$s$H3NG'$9$kI,MW$,$"$j$^$9!#(gnuplot $HG$0U$N MIL-D-28003A =`5r%"%W%j%1!<%7%g%s$O!"%U%)%s%HL>$NBgJ8;z>.J8;z$N0c$$$OL5;k$7$^$9!#) ?7$7$$%U%)%s%H$r$$/$D$bDI2C$7$?$$>l9g$O!"**set term** %3%^%s%I$r7+$jJV$7;HMQ$7$F$/$@$5$$!#

Nc:

```
set terminal cgm 'Old English'
set terminal cgm 'Tengwar'
set terminal cgm 'Arabic'
set output 'myfile.cgm'
plot ...
set output
```

**set label** %3%^%s%I$G$O?7$7$$%U%)%s%H$rF3F~$9$k$3$H$O$G$-$^$;$s!#

### CGM $N%U%)%s%H%5%$%: (fontsize)

%U%)%s%H$O!"%Z!<%8$, 6 %$%s%A$NI}$G$"$k$H2>Dj$7$F?-=L$5$l$^$9!#**size** %3%^%s%I$G%Z!<%8$N=D2#HfΣ,JQ99$5$l$F$$$?$j!"CGM %U%!%$%k$,0[$J$kI}$KJQ49$5$l$F$$$k>l9g!"7k2L$H$7$F%U%)%s%H$N%5%$%:$b3HBg$5$l$?$j=L>.$5$l$?$j$9$k$3$H$K$J$j$^$9!#2>Dj$5$l$F$$$kI}$rJQ99$9$k$K$O!"**width** %*%W%7%g%s$r;HMQ$7$F$/$@$5$$!#

### Cgm linewidth

**linewidth** %*%W%7%g%s$O@~$NI}$r%]%$%s%HC10L (pt) $G@_Dj$7$^$9!#%G%U%)%k%H$NI}$O 1 pt $G$9!#**fontsize** $d **width** %*%W%7%g%s$N$H$3$m$G@bL@$5$l$F$$$k$h$&$K!"%Z!<%8$N<B:]$NI}$K$h$C$F$=$N=L<\$O1F6A$r<u$1$^$9!#

### Cgm rotate

**norotate** %*%W%7%g%s$O%F%-%9%H$N2sE>$r$7$J$$$h$&$K$7$^$9!#Nc$($P Word for Windows 6.0c MQ$N CGM F~NO%U%#%k%?$O2sE>$5$l$?J8;zNs$r<u$1IU$1$^$9$,!"Word $KIUB0$9$k DRAW %(%G%#%?$O$=$l$r<u$1IU$1$k$3$H$,$G$-$:!"%0%i%U$rJT=8$9$k$H (Nc$($P6J@~$K8+=P$7$r$D$1$k) !"A4$F$N2sE>$5$l$?J8;zNs$O?eJ?J}8~$K$J$C$FJ]B8$5$l$F$7$^$$!"Y <4$N8+=P$7$O%/%j%C%W$5$l$k6-3&@~$r1[$($F$7$^$&$G$7$g$&!#**norotate** %*%W%7%g%s$r;H$($P!"8+1I$($NNI$/$J$$>l=j$+$i Y <4$N8+=P$7$,;O$^$C$F$7$^$$$^$9$,!"JT=8$K$h$C$F%@%a!<%8$r<u$1$k$3$H$O$J$/$J$j$^$9!#**rotate** %*%W%7%g%s$O%G%U%)%k%H$N5sF0$rJ]>Z$7$^$9!#

### Cgm solid

**solid** %*%W%7%g%s$OIA2h$NE@@~$N@~IA2h%9%?%$%k$rL58z$9$k$N$K;H$$$^$9!#$3$l$O!"%+%i!<$,M-8z$G$"$k>l9g!"$^?E@@~$K$9$k$3$H%G%0%i%U$,8+$K$/$/$J$k>l9g$KM-MQ$G$7$g$&!#**dashed** %*%W%7%g%s$O%G%U%)%k%H$N5sF0$rJ]>Z$7!"$3$N>l9g8D!9$N@~<o$K0[$J$kE@@~$N%Q%?!<%s$,M?$($i$l$^$9!#

### CGM $N%5%$%: (size)

CGM %0%i%U$N%G%U%)%k%H$N%5%$%:$O!"2#CV$- (landscape) $G$OI} 32599, =D 23457 !"=DCV$- (portrait) $G$OI} 23457, =D 32599 $G$9!#

### Cgm width

CGM %U%!%$%k$NA4$F$ND9$5$OCj>]E*$JC10L$r;}$A!"$=$N%U%!%$%k$rFI$`%"%W%j%1!<%7%g%s$,:G=*E*$J%0%i%U$N%5%$%:$r7hD$j$7$^$9!#%G%U%)%k%H$G$O:G=*E*$J%0%i%U$NI}$O 6 %$%s%A (15.24 cm) $G$"$k$H2>Dj$5$l$F$$$^$9!#$3$NI}$O@5$7$$%U%)%s%H%5%$%:$r7hW;$9$k$N$K;H$o$l!"**width** %*%W%7%g%s$GJQ99$G$-$^$9!#%-!<%o!<%I **width** $N8e$KI}$r%]%$%s%HC10L$G;XD$j$7$^$9!#($3$3$G!"%]%$%s%H$O PostScript $HF1MM 1/72 %$%s%A$r0UL#$7$^$9!#$3$NC10L$O TeX $G$O"big point" $H8F$P$l$F$$$^$9!#) B>$NC10L$+$iJQ49$9$k$K$O!"gnuplot $N?t<0$,;H$($^$9!#

Nc:

```
set terminal cgm width 432            # %G%U%)%k%H
set terminal cgm width 6*72           # >e$HF1$8CM
set terminal cgm width 10/2.54*72     # 10 cm $NI}
```

### Cgm nofontlist

%G%U%)%k%H$N%U%)%s%H%j%9%H (font table) $O WebCGM $G4+9p$5$l$F$$$k%U%)%s%H$r4^$s$G$$$F!"$3$l$O Microsoft Office $H Corel Draw $N CGM (Computer Graphics Metafile) F~NO%U%#%k%?$KE,9g$7$F$$$^$9!#B>$N%"%W%j%1!<%7%g%s$O0[$J$k%U%)%s%H!"$"$k$$$O0[$J$k%U%)%s%HL>$r;HMQ$9$k$+$bCN$l$^$;$s$,!"$=$l$O%^%K%e%"%k$K$O=q$+$l$F$$$J$$$+$bCN$l$^$;$s!#%*%W%7%g%s **nofontlist** (**winword6** $bF1$80UL#) $r;HMQ$9$k$H CGM %U%!%$%k$+$i%U%)%s%H%j%9%H$r:o=|$7$^$9!#$3$N>l9g!"FI$_9~$s$@%"%W%j%1!<%7%g%s$O%G%U%)%k%H$N%U%)%s%H%j%9%H$r;HMQ$9$k$G$7$g$&!#gnuplot $O$=$N>l9g$G$b%U%)%s%HHV9f$NA*Br$N$?$a$K<+J,$N%G%U%)%k%H$N%U%)%s%H%j%9%H$r;HMQ$7$^$9!#$h$C$F!"'Helvetica' $,1 HV$K$J$j!"$=$l$,$"$J$?$N;HMQ$9$k%"%W%j%1!<%7%g%s$N%G%U%)%k%H%U%)%s%H%j%9%H$N:G=i$N$b$N$K$J$j$^$9!#'Helvetica Bold' $,$=$N%U%)%s%H%j%9%H$N 2 HVL\$N%U%)%s%H$KBP1~$7!"B>$bF1MM$H$J$j$^$9!#

## Context

ConTeXt $O (3 ($NIA2h$N$?$a$K) Metapost $H9bEY$KM;9g$7!"9bIJ<A$J PDF J8=q$r@8@.$9$k$?$a$N TeX $N%^%/%m%Q%C%1!<%8$G$9!#$3$N=PNO7A<0$O!"Metafun %=!<%9$r@8@.$7$^$9$,!"$3$l$O<jF0$GJT=8$G$-!"30It$+$i$[$H$s$I$N$3$H$r$"$J$?$,@_Dj$G$-$^$9!#

ConTeXt + gnuplot %b%8%e!<%k$NJ?6QE*$J%f!<%6$K$O!"$3$N%Z!<%8$rFI$`$h$j$b!"**Using ConTeXt** $r;2>H$9$k$+!"ConTeXt $N gnuplot %b%8%e!<%k$N%^%K%e%"%k$r;2>H$9$k$3$H$r?d>)$7$^$9!#

=PNO7A<0 **context** $O!"0J2<$N%*%W%7%g%s$r%5%]!<%H$7$F$$$^$9:

=q<0:

```
    set term context {default}
            {defaultsize | size <scale> | size <xsize>{in|cm}, <ysize>{in|cm}}
            {input | standalone}
            {timestamp | notimestamp}
            {noheader | header "<header>"}
            {color | colour | monochrome}
            {rounded | mitered | beveled} {round | butt | squared}
            {dashed | solid} {dashlength | dl <dl>}
            {linewidth | lw <lw>}
            {fontscale <fontscale>}
            {mppoints | texpoints}
            {inlineimages | externalimages}
            {defaultfont | font "{<fontname>}{,<fontsize>}"}
```

standalone $G$J$$%0%i%U (**input**) $G$O!"%*%W%7%g%s$O%0%i%U%5%$%:$rA*Br$9$k **size**!"$9$Y$F$N%i%Y%k$rG\N( <fontscale> $G?-=L$9$k **fontscasle**!"$*$h$S font %5%$%:$N$_0UL#$r;}$A!"B>$N%*%W%7%g%s$O7Y9p$J$/L5;k$5$l$k$N$_$G!"$=$l$i$O$=$N%0%i%U%#%C%/$rFI$_9~$`.tex %U%!%$%k$NJ}$G@_Dj$7$F$/$@$5$$!#85$NJ8=q$N%U%)%s%H$,12pt $G$O$J$$>l9g$O!"E,@Z$J%U%)%s%H%5%$%:$r;XDj$9$k$3$H$r6/$/?d>)$7$^$9!#$=$l$K$h$j!"gnuplot $,%i%Y%kMQ$K$I$l$/$i$$$NBg$-$5$N%9%Z!<%9$r3NJ]$9$l$P$$$$$+$rCN$k$3$H$,$G$-$^$:!#

**default** $O!"$9$Y$F$N%*%W%7%g%s$r%G%U%)%k%H$NCM$K%j%;%C%H$7$^$9!#

**defaultsize** $O!"IA2h%5%$%:$r 5in x 3in $K@_Dj$7$^$9!#**size** <scale> $O!"IA2h%5%$%:$r%G%U%)%k%H%5%$%:$N <scale> G\$K$7$^$9$,0z?t$r ',' 6h@Z$j$G 2 $DM?$($?>l9g$O!":G=i$N$b$N$O2#$N%5%$%:$r!"2 $DL\$N$b$N$O?bD>%5%$%:$r@_Dj$7$^$9!#$=$l$i$N%5%$%:$K$O!"C10L$H$7$F%$%s%A('in'), %;%s%A ('cm') $,;H$($^$9$,!">JN,$7$?>l9g$O%G%U%)%k%HCM$KBP$9$kHf$G$"$k$H$_$J$7$^$9!#

**input** (%G%U%)%k%H) $O!"B>$N ConTeXt J8=q$+$i<h$j9~$a$k%0%i%U$r@8@.$7$^$9!#**standalone** $O!"$=$l$K?t9TDI2C$7!"$=$l<+?H$,$=$N$^$^%3%s%Q%$%k$G$-$k$h$&$K$7$^$9!#$=$N>l9g!"**header** %*%W%7%g%s$,I,MW$K$J$k$+$b$7$l$^$;$s!#

standalone $N%0%i%U$K@_Dj/Dj5A/%^%/%m$rDI2C$7$?$$>l9g$O **header** $r;HMQ$7$F$/$@$5$$!#%G%U%)%k%H$O **noheader** $G$9!#

**notimestamp** $O! "%3%a%s%HItJ,$NF|;~$N=PNO$rM^@)$7$^$9(%P!<%8%g%s4IM}%7%9%F%`$r;H$C$F$$$k>l9g!"F|IU$@$10c$&$b$N$r?7$7$$%P!<%8%g%s$H$7$FEPO?$7$?$/$O$J$$$G$7$g$&)!#

**color** (%G%U%)%k%H) $O! "%+%i!<IA2h$r@8@.$7$^$9$,!"**monochrome** $O0l@Zspecial $rF~$l$^$;$s!#Gr9u%W%j%s%?MQ$K$O!"$=$N5sF0$r$3$s$JIw$KJQ$($?J}$,$b$C$HNI$/$J$k$H$$$&%"%$%G%"$r;}$C$F$$$k?M$O!"@'HsDs0F$7$F$/$@$5$$!#

**rounded** (%G%U%)%k%H) $H **mitered**, **beveled** $O!"@~J,$N@\9gIt$N7A>u$r@)8f$7!"**round** (default) $H **butt**, **squared** $O!"@~J,$NC<$N7A>u$r@)8f$7$^$9!#>\:Y$O!"PostScript $+ PDF $N%j%U%!%l%s%9%^%K%e%"%k$r;2>H$7$F$/$@$5$$!#7c$7$/JQ2=$9$k4X?t$HB@$$$@~MQ$K$O!"@~J,$N@\9gIt$G$N@m$C$?3Q$rHr$1$k$h$&$K**rounded** $H **round** $r;H$&$H$$$$$G$7$g$&!#($3$l$K4X$9$k0lHIE*$J;EAH$_$O!"$3$N%*%W%7%g%s$r3FIA2h%9%?%$%kKh$KJL!9$K;XDj$G$-$k$h$& gnuplot $,%5%]!<%H$9$Y$-$@$H;W$$$^$9!#)

**dashed** (%G%U%)%k%H) $O!"0[$J$k@~<o$K0[$J$kE@@~%Q%?!<%s$r;H$$!"**solid** $O!"$9$Y$F$NIA2h$K<B@~$r;HMQ$7$^$9!#

**dashlength** ($^$?$O **dl**) $O!"E@@~$N@~J,$ND9$5$r <dl> G\$7$^$9!#**linewidth** ($^$?$O **lw**) $O!"$9$Y$F$N@~I}$r <lw> G\$7$^$9!#(lw 1 $O 0.5bp $r0UL#$7!"$3$l$O Metapost $NIA2h$N%G%U%)%k%H$N@~I}$G$9) **fontscale** $O!"%F%-%9%H%i%Y%k$r%G%U%)%k%H$NJ8=q%U%)%s%H$N <fontscale> G\$K3HBg$7$^$9!#

**mppoints** $O!"Metapost $GIA2h$5$l$?Dj5A:Q$_$NE@$N7A>u$r;HMQ$7$^$9!#**texpoints** $O!"4JC1$K@_Dj$G$-$k5-9f%;%C%H$r;HMQ$7$^$9!#$3$l$O!"0J2<$N$h$&$K$7$F ConTeXt $GDj5A$G$-$^$9:

```
\defineconversion[my own points][+,{\ss x},\mathematics{\circ}]
\setupGNUPLOTterminal[context][points=tex,pointset=my own points]
```

**inlineimages** $O!"%P%$%J%j2hA|$rJ8;zNs$H$7$F=q$-=P$7$^$9$,!"$3$l$O ConTeXt MKIV $N$_$G5!G=$7$^$9!# **externalimages** $O!"PNG %U%!%$%k$r30It=PNO$7!"$3$l$O ConTeXt MKII $G5!G=$7$^$9!#$3$l$,F0:n$9$k$?$a$K$O!"gnuplot $, PNG 2hA|=PNO$r%5%]!<%H$7$F$$$kI,MW$,$"$j$^$9!#

standalone $N%0%i%U$G$O!"**font** $G%U%)%s%HL>$H%5%$%:$r@_Dj$G$-$^$9!#standalone $G$J$$%b!<%I (**input**) $G$O!"%F%-%9%H%i%Y%k$K==J,$J%9%Z!<%9$r3d$jEv$F$k$?$a$K%U%)%s%H%5%$%:$N$_$,0UL#$r;}$A$^$9%3%^%s%I

```
set term context font "myfont,ss,10"
```

$O!"0J2<$N$h$&$K$J$j$^$9:

```
\setupbodyfont[myfont,ss,10pt]
```

Nc$($P$5$i$KDI2C$G **fontscale** $r 0.8 $K@_Dj$9$k$H!"7k2L$H$7$F%U%)%s%H$O 8pt $NBg$-$5$K$J$j!"

```
set label ... font "myfont,12"
```

$O 9.6pt $K$J$j$^$9!#

E,Ev$J%?%$%W%9%/%j%W%H%U%)%s%H($H%X%C%@!<) $rMQ0U$9$k$N$O<+J,$G9T$C$F$5$b$J$/$P%U%)%s%H$N@Z$jBX$($O8z2L$r;}$A$^$;$s!#ConTeXt MKII (pdfTeX) $NI8=`%U%)%s%H$O!"0J2<$N$h$&$K$7$F;H$($^$9:

```
set terminal context standalone header '\usetypescript[iwona][ec]' \
    font "iwona,ss,11"
```

%U%)%s%H$NMxMQ$K4X$9$k ConTeXt $N:G?7$N>pJs$K$D$$$F$O!"ConTeXt $NJ8=q!"wiki!"%a!<%j%s%0%j%9%H(%"!<%+%$%V) $rC5$7$F$_$F$/$@$5$$!#

Nc:

```
set terminal context size 10cm, 5cm     # 10cm, 5cm
set terminal context size 4in, 3in      # 4in, 3in
```

UTF-8 %(%s%3!<%I%i%Y%k$r standalone (%Z!<%8A4BN) %0%i%U$G;HMQ$9$k$K$O:

```
set terminal context standalone header '\enableregime[utf-8]'
```

### Requirements

ConTeXt MQ$N gnuplot %b%8%e!<%k: http://ctan.org/pkg/context-gnuplot

$H!":G?7$N ConTeXt $,I,MW$G$9!#$=$3$+$i gnuplot $r8F$S=P$9$K$O!"write18 $r2DG=$K$9$kI,MW$,$"$j$^$9!#$[$H$s$I$N TeX G[IU*$G$O!"$3$l$O texmf.cnf $G shell_escape=t $H$9$k$3$H$G@_Dj$G$-$^$9!#

$3 $N =P NO 7A <0 $H $h $j >\ $7 $$ %X %k %W $H Nc $K 4X $7 $F $O 0J 2< $b ;2 >H $7 $F $/ $@ $5 $$: http://wiki.contextgarden.net/Gnuplot

### Calling gnuplot from ConTeXt

ConTeXt J8=q$G%0%i%U$r:n@.$9$k:G$b4JC1$JJ}K!$O0J2<$NDL$j:

```
\usemodule[gnuplot]
\starttext
\title{How to draw nice plots with {\sc gnuplot}?}
\startGNUPLOTscript[sin]
set format y "%.1f"
plot sin(x) t '$\sin(x)$'
\stopGNUPLOTscript
\useGNUPLOTgraphic[sin]
\stoptext
```

$3$l$O<+F0E*$K gnuplot $r<B9T$7!"$=$N7k2L$N2hA|$rJ8=qCf$K<h$j9~$_$^$9!#

## Corel

CorelDraw (1995 G/:") MQ$N8E$$ (legacy) =PNO7A<0$G$9!#

=q<0:

```
set terminal corel {monochrome | color} {"<font>" {<fontsize>}}
                   {<xsize> <ysize> {<linewidth> }}
```

$3$3$G!"%U%)%s%H%5%$%:(**fontsize**) $H@~I}(**linewidth**) $O%]%$%s%HC10L!"2#I}(**xsize**) $H=DI}(**ysize**) $O%$%s%AC10L$G$9!#%G%U%)%k%H$NCM$O$=$l$>$l!"monochrome, "SwitzerlandLight", 22, 8.2, 10, 1.2 $G$9!#

## Debug

$3$N%I%i%$%P$O **gnuplot** $N%G%P%C%0$N$?$a$KDs6!$5$l$F$$$k$b$N$G$9!#$*$=$i$/%=!<%9%3!<%I$r=$@5$9$k%f!<%6$N$_$,;HMQ$9$k$b$N$G$7$g$&!#

## Domterm

**domterm** =PNO7A<0$O!"domterm, qtdomterm %W%m%0%i%`Ey$N DomTerm %?!<%_%J%k%(%_%e%l!<%?>e$GF0:n$7$^$9!#$3$l$O!"%?!<%_%J%k=PNOFb$XD>@\ SVG %0%i%U2hA|$rKd$a9~$`$3$H$r%5%]!<%H$7$F$$$^$9!#http://domterm.org $r;2>H$7$F$/$@$5$$!#

**svg** =PNO7A<0$N%X%k%W$rFI$s$G$/$@$5$$!#

## Dumb

%@%`C<Kv(**dumb**) %I%i%$%P$O!"ASCII J8;z$r;HMQ$7$F%F%-%9%HNN0h$KIA2h$7$^$9!#%5%$%:$N;XDj$H2~9T@)8fMQ$N%*%W%7%g%s$,$"$j$^$9!#

=q<0:

```
set terminal dumb {size <xchars>,<ychars>} {[no]feed}
                  {aspect <htic>{,<vtic>}}
                  {[no]enhanced}
```

<xchars>, <ychars> $O%F%-%9%HNN0h$N%5%$%:$r@_Dj$7!"%G%U%)%k%H$O 79 x 24 $H$J$C$F$$$^$9!#:G8e$N2~9T$O!"**feed** %*%W%7%g%s$,@_Dj$5$l$F$$$k>l9g$N$_=PNO$5$l$^$9!#

%*%W%7%g%s **aspect** $O!"%0%i%U$N%"%9%Z%/%HHf$N@)8f$K;HMQ$7$^$9!#$3$l$O?eJ?<4!"?bD><4$NL\@9$j9o$_$ND9$5$r@_Dj$7$^$9!#@0?t$N;XDj$N$_$,5v$5$l$F$$$F!"%G%U%)%k%H$O 2,1 $G!"$3$l$O6&DL$N%9%/%j!<%s%U%)%s%H$N%"%9%Z%/%HHf$KBP1~$7$^$9!#

%*%W%7%g%s **ansi**, **ansi256**, **ansirgb** $O?'0 7$&$?$a$K=PNO$K%(%9%1!<%W%7!<%1%s%9$rA^F~$7$^$9$,!"$"$J$?$N%?!<%_%J%k$G$O=hM}$G$-$J$$$+$b$7$l$^$;$s!#%G%U%)%k%H$O **mono** $G$9!#**ansi** %b!<%I$G$O!"?'$O **set colorsequence classic** $r;H$&$N$,0lHV9g$$$^$9!#$I$N%b!<%I$r;HMQ$9$k$+$K$h$C$F!"**dumb** =PNO7A<0$O!"0J2<$N%7!<%1%s%9$r=PNO$7$^$9(6uGr$rDI2C$;$:$K):

```
ESC [ 0 m           B0@-$r%G%U%)%k%H$K%j%;%C%H
foreground color:
I=<(?':
ESC [ 1 m           6/D4/B@;z$r%;%C%H
ESC [ 22 m          6/D4/B@;z$r%*%U$K
ESC [ <fg> m        30 <= <fg> <= 37 $N%+%i!<%3!<%I;XDj
ESC [ 39 m          %G%U%)%k%H$K%j%;%C%H
ESC [ 38; 5; <c> m  %Q%l%C%H$NHV9f;XDj (16 <= <c> <= 255)
ESC [ 38; 2; <r>; <g>; <b> m  @.J,;XDj (0 <= <r,g,b> <= 255)
GX7J?':
ESC [ <bg> m        40 <= <bg> <= 47 $N%+%i!<%3!<%I;XDj
ESC [ 49 m          %G%U%)%k%H$K%j%;%C%H
ESC [ 48; 5; <c> m  %Q%l%C%H$NHV9f;XDj (16 <= <c> <= 231)
ESC [ 48; 2; <r>; <g>; <b> m  @.J,;XDj (0 <= <r,g,b> <= 255)
```

Nc$($P!"0J2<$N5-=R$b;2>H$7$F$/$@$5$$: https://en.wikipedia.org/wiki/ANSI_escape_code#Colors

Nc:

```
set term dumb mono size 60,15 aspect 1
set tics nomirror scale 0.5
plot [-5:6.5] sin(x) with impulse ls -1

   1 +-------------------------------------------------+
 0.8 +|||++                   ++||||++                 |
 0.6 +|||||+                 ++|||||||+  sin(x) +----+ |
 0.4 +||||||+               ++|||||||||+               |
 0.2 +|||||||+             ++|||||||||||+             +|
   0 ++++++++++++++++++++++++++++++++++++++++++++++++++|
-0.2 +        +|||||||||||+              +|||||||||||+ |
-0.4 +         +|||||||||+                +|||||||||+  |
-0.6 +          +|||||||+                  +|||||||+   |
-0.8 +           ++||||+                    ++||||+    |
  -1 +---+--------+--------+-------+--------+--------+-+
        -4       -2        0       2        4        6
```

## Dxf

**dxf** $O AutoCad (%j%j!<%9 10.x) MQ$N=PNO%I%i%$%P$G$9!#$3$N%I%i%$%P$K$O%*%W%7%g%s$O$"$j$^$;$s!#%G%U%)%k%H$NBg$-$5$O AutoCad $NC10L$G$N 120x80 $G$9!#**dxf** $O 7 ?' (Gr!"@V!"2+!"NP!"?e?'!"@D!"@V;g) $r;H$$^$9$,!"$3$l$rJQ99$9$k$K$O%I%i%$%P%=!<%9%U%!%$%k$r=$@5$9$kI,MW$,$"$j$^$9!#Gr9u$N=PNOAuCV$r;H$&>l9g!"$=$l$i$N?'$O@~$NB@$5$NOc$$GI=8=$5$l$^$9!#Cm0U: $I$J$?$+!"DXF 5,3J2012 $r;H$&$h$&$K99?7$7$F$/$@$5$$!

## Dxy800a

Cm0U: 8E$$(legacy) =PNO7A<0$G$9!#$3$N%I%i%$%P$O Roland DXY800A %W%m%C%?$r%5%]!<%H$7$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Eepic

**eepic** %I%i%$%P$O LaTeX picture 4D6-$r3HD%$9$k$b$N$r%5%]!<%H$7$^$9!#$3$l$O **latex** %I%i%$%P$KBe$o$kJL$JA*Br;h$G$9!#

$3$N%I%i%$%P$K$h$k=PNO$O!"LaTeX MQ$N "eepic.sty" %^%/%m%Q%C%1!<%8$H6&$K;H$o$l$k$3$H$r2>Dj$7$F$$$^$9!#$=$l$r;H$&$K$O!""eepic.sty" $H"epic.sty"!"$*$h$S "tpic" \special L?Na72$r%5%]!<%H$9$k%W%j%s%?%I%i%$%P$,I,MW$G$9!#$b$7!"$"$J$?$N;H$&%W%j%s%?%I%i%$%P$,$=$l$i$N "tpic" \special L?Na$r%5%]!<%H$7$F$$$J$$>l9g$G$b!""eepicemu.sty" $r;H$&$3$H$G$=$l$i$N$&$A$N$$$/$D$+$r;H$($k$h$&$K$J$j$^$9!#dvips $H dvipdfm $O "tpic" \special $r%5%]!<%H$7$F$$$^$9!#

=q<0:

```
  set terminal eepic {default} {color|dashed} {rotate} {size XX,YY}
                     {small|tiny|<fontsize>}
```

%*%W%7%g%s: %*%W%7%g%s$OG$0U$N=gHV$GM?$($k$3$H$,$G$-$^$9!#'color' $O gnuplot $K \color{...} %3%^%s%I$r@8@.$5$;!"$=$1$K$h$j%0%i%U$r%+%i!<$K$7$^$9!#$3$N%*%W%7%g%s$r;HMQ$9$k>l9g$O!"latex J8=q$N%W%j%"%s%V%k$K \usepackage{color} $rF~$1$kI,MW$,$"$j$^$9!#'dashed' $O@~<o$KE@@~$r;HMQ$9$k$3$H$r5v2D$7$^$9!#$3$N%*%W%7%g%s$r;XDj$7$J$$$H!"?'!9$JB@$5$N<B@~$N$_$,;H$o$l$^$9!#'dashed' $H 'color' $O01J}$N$_$,0UL#$r;}$A!"'color' $,;XDj$5$l$?>l9g!"'dashed' $OL5;k$5$l$^$9!#'rotate' $OK\Ev$K2sE> (90 EY) $5$l$?J8;zNs$r;HMQ$9$k$h$&$K$J$j$^$9!#;XDj$7$J$$>l9g$O!"1 J8;z 1 J8;z!">e$K@Q$_>e$2$F$$$/J}K!$G2sE>$5$l$?J8;zNs$r:n$j$^$9!#$3$N%*%W%7%g%s$r;H$&>l9g$O!"\usepackage{graphicx} $r%W%j%"%s%V%k$KF~$l$kI,MW$,$"$j$^$9!#'small' $O point %9%?%$%k$G$N%0%i%UI A2h$N0u$H$7$F \scriptsize $N5-9f$r;HMQ$7$^$9 (B?J,$3$l$O TeX $G$O$@$a$G!"LaTeX2e $G$7$+;H$($J$$$G$7$g$&)!#%G%U%)%k%H$G$OI8=`$N?t<0$N%5%$%:$r;HMQ$7$^$9!#'tiny' $O!"$=$l$K \scriptscriptstyle $N5-9f$r;HMQ$7$^$9!#'default' $OA4$F$N%*%W%7%g%s$r%G%U%)%k%H$NCM$K%j%;%C%H$7$^$9!#%G%U%)%k%H$O!"color $O$J$7!"dashed line $O$J$7!"5?;w2sE> (@Q$_>e$2) J8;zNs$N;HMQ!"Bg$-$J%5%$%:$N5-9f$N;HMQ!"$G$9!#<fontsize> $O picture 4D6-Fb$G$N%U%)%s%H%5%$%:$r;XDj$9$k?t;z$G$9!#C10L$O pt (%]%$%s%H) $G!"10 pt $O$[$\ 3.5 mm $G$9!#%U%)%s%H%5%$%:$r;XDj$7$J$$>l9g!"A4$F$N%0%i%UFb$NJ8;z$O \footnotesize $K@_Dj$5$l$^$9!#

Cm0U: J8;z # ($*$h$S$=$NB>(La)TeX $GFCJL$J0UL#$r;}$D$=$NB>$NJ8;z) $r \\ (%P%C%/%9%i%C%7%e 2 $D) $G%(%9%1!<%W$9$k$3$H$rK:$l$J$$$G$/$@$5$$!#%0%i%U$N3Q$,6a$9$.$k$HE@@~$O<B@~$N$h$&$K$J$j$^$9!#($3$l$, tpic specials $N0lHIE*$JLdB j$J$N$+!"eepic.sty $d dvips/dvipdfm $N%P%0$,8 60x$J$N$+$O;d$K$O$o$+$j$^$;$s!#) %G%U%)%k%H$N eepic %0%i%U$NBg$-$5$O 5x3 %$%s%A$G!"$3$l$O teminal %*%W%7%g%s$N **size** $GJQ99 2DG=$G$9!#?t$"$kCf$G!"E@ (point) $O!"LaTeX $N%3%^%s%I "\Diamond", "\Box" $J$I$r;H$C$FIA$+$l$^$9!#$3$l$i$N%3%^%s%I$O8=:_$O LaTeX2e $N%3%"$K$OB8:_$;$:latexsym %Q%C%1!<%8$K4^$^$l$F$$$^$9$,!"$3$N%Q%C%1!<%84pK\G[I[$N0lIt$G$"$j!"$h$C$FB?$/$N LaTeX $N%7%9%F%`$N0lIt$K$J$C$F$$$^$9!#$3$N%Q%C%1!<%8$r;H$&$3$H$rK:$l$J$$$G$/$@$5$$!#latexsym $NBe$o$j$K amssymb %Q%C%1!<%8$r;H$&$3$H$b2DG=$G$9!#LaTeX $K4X$9$kA4$F$N%I%i%$%P$OJ8;zNs$NG[CV$N@)8f$KFCJL$JJ}K!$rDs6!$7$^$9: '{' $G;O$^$kJ8;zNs$O!"'}' $GJD$8$kI,MW$,$"$j$^$9$,!"$=$NJ8;zNsA4BN$,?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0$5$l$^$9!#'[' $G;O$^$kJ8;zNs$N>l9g$O!"0LCV$N;XDj$r$9$kJ8;zNs (t,b,l,r $N$&$A 2 $D$^$G) $,B3$-!"<!$K']{'!"J8;zNsK\BN!"$G:G8e$K '}' $H$7$^$9$,!"$3$NJ8;zNs$O LaTeX $, LR-box $H$7$F@07A$7$^$9!#'\rule{}{}' $r;H$($P$5$i$KNI$$0LCV9g$o$;$,2DG=$G$7$g$&!#

Nc: set term eepic

```
 $O!"%0%i%U$r picture 4D6-$K4^$^$l$? eepic %^%/%m$H$7$F=PNO$7$^$9!#
 $=$N%U%!%$%k$r LaTeX J8=q$K \input $G<h$j9~$s$G$/$@$5$$!#
```

set term eepic color tiny rotate 8

```
 eepic %^%/%m$r \color %^%/%m!"point 0u$O \scripscriptsize $NBg$-$5!"
 K\Ev$K2sE>$5$l$?J8;z$N;HMQ!"$*$h$SA4$F$NJ8;z$r 8pt $K%;%C%H$7$F=PNO
 $7$^$9!#
```

8+=P$7$N0LCV9g$o$;$K4X$7$F: gnuplot $N%G%U%)%k%H (BgDq$=$l$J$j$K$J$k$,!"$=$&$G$J$$$3$H$b$"$k):

```
      set title '\LaTeX\ -- $ \gamma $'
```

?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0:

```
      set label '{\LaTeX\ -- $ \gamma $}' at 0,0
```

0LCV$rL@<(E*$K;XDj (>e$K9g$o$;$k):

```
      set xlabel '[t]{\LaTeX\ -- $ \gamma $}'
```

B>$N8+=P$7 - L\@9$j$ND9$$8+=P$7$KBP$9$k8+@Q$j:

```
      set ylabel '[r]{\LaTeX\ -- $ \gamma $\rule{7mm}{0pt}}'
```

## Emf

**emf** %I%i%$%P$O EMF (Enhanced Metafile Format) %U%!%$%k$r@8@.$7$^$9!#$3$N7A<0$N%U%!%$%k$OB?$/$N MS-Windows %"%W%j%1!<%7%g%s$GG'<1$G$-$^$9!#

=q<0:

```
set terminal emf {color | monochrome}
                 {enhanced {noproportional}}
                 {rounded | butt}
                 {linewidth <LW>} {dashlength <DL>}
                 {size XX,YY} {background <rgb_color>}
                 {font "<fontname>{,<fontsize>}"}
                 {fontscale <scale>}
```

**monochorome** %b!<%I$O@^$l@~$rE@@~$N%Q%?!<%s$r=[4D$5$;$FBG$A=P$7$^$9! #**linewidth** <**factor**> $OA4$F $N@~I}$r$3$3$G;XDj$9$kCMG\$K$7$^$9! #**dashlength** <**factor**> $O! "B@$$@~$K$OJXMx$G$7$g$&! #<**fontname**> $O%U%)%s%HL>! "<**fontsize**> $O%]%$%s%HC10L$G$N%U%)%s%H$NBg$-$5$G$9! #

=PNO2hA|$N7A<0E*$J(L>$P$+$j$N) %5%$%:$O! "%G%U%)%k%H$G$OE,Ev$JC10L$G$N1024x768 $K$J$C$F$$$^$9! #%*%W%7%g%s **size** $r;H$C$FJL$J7A<0E*$J%5%$%:$r;XDj$G$-$^$9! #

3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $O! "%W%m%]!<%7%g%J%kJ8;z4V3V$r6a;w$7$h$&$H$7$^$9! #%b%N%9%Z!<%9%U%)%s%H$r;H$&>l9g! "$"$k$$$O$3$N6a;w$r9%$^$J$$>l9g! "%*%W%7%g%s **noproportional** $r;H$&$3$H$G$3$NJd@5$r%*%U$K$G$-$^$9! #

%G%U%)%k%H$N@_Dj$O! "**color font "Arial,12" size 1024,768** $G! "**default** $rA*Br$9$k$HA4$F$N%*%W%7%g%s$, $=$N%G%U%)%k%H$NCM$K$J$j$^$9! #

Nc:

```
set terminal emf 'Times Roman Italic, 12'
```

## Emxvga

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9! #**emxvga**, **emxvesa**, **vgal** $N3F%I%i%$%P$O$=$l$>$l SVGA, vesa SVGA, VGA %0%i%C%U%#%C%/%\!<%I$N PC $r%5%]!<%H$7$^$9! #$3$l$i$O DOS! "$^$?$O OS/2 >e$G! ""emx-gcc" $G%3%s%Q%$%k$5$l$?$k$3$H$r0U?^$7$F$$$^$9! #$3$l$i$K$O$5$i$K VESA %Q%C%1! <%8$H SVGAKIT $,I,MW$G$9! #$3$l$i $O Johannes Martin (JMARTIN@GOOFY.ZDV.UNI-MAINZ.DE) $,J]<i$7 David J. Liu (liu@phri.nyu.edu) $,3HD%$7$F$$$k%i%$%V%i%j$G$9! #

=q<0:

```
set terminal emxvga
set terminal emxvesa {vesa-mode}
set terminal vgal
```

M#0l$N%*%W%7%g%s$O **emxvesa** $KBP$9$k vesa $N%b!<%I$G! "%G%U%)%k%H$G$O$=$l$O G640x480x256 $H$J$C$F$$ $^$9! #

## Epscairo

=PNO7A<0 **epscairo** $O! "cairo, pango %i%$%V%i%j$rMQ$$$F EPS =PNO(Encapsulated PostScript) $r@8@.$7$^$9! # cairo $O version 1.6 0J9_$,I,MW$G$9! #

>\:Y$O! "**pdfcairo** =PNO7A<0$N%X%k%W$r;2>H$7$F$/$@$5$$! #

## Epslatex

**epslatex** %I%i%$%P$O LaTeX $G=hM}$9$Y$-=PNO$r@8@.$7$^$9! #

=q<0:

```
set terminal epslatex   {default}
set terminal epslatex   {standalone | input}
                        {oldstyle | newstyle}
                        {level1 | leveldefault | level3}
                        {color | colour | monochrome}
                        {background <rgbcolor> | nobackground}
```

```
{dashlength | dl <DL>}
{linewidth | lw <LW>} {pointscale | ps <PS>}
{rounded | butt}
{clip | noclip}
{palfuncparam <samples>{,<maxdeviation>}}
{size <XX>{unit},<YY>{unit}}
{header <header> | noheader}
{blacktext | colortext | colourtext}
{{font} "fontname{,fontsize}" {<fontsize>}}
{fontscale <scale>}
```

epslatex =PNO7A<0$O!"J8;zNs$r PostScript %3!<%I$K4^$^$;$kBe$o$j$K LaTeX %U%!%$%k$K0\$9$3$H$r=|$1$P **terminal postscript eps** F1MM$KIA2h$7$^$9!#$h$C$F!"**postscript terminal** $HB?$/$N%*%W%7%g%s$,6&DL$G$9!#

version 4.0 $+$i 4.2 $N4V$K!"postscript =PNO7A<0$H$N$h$jNI$$8_49@-$N$?$a$K epslatex =PNO$OJQ99$5$1$^$7 $?!#IA2h%5%$%:$O 5 x 3 %$%s%A$+$i 5 x 3.5 %$%s%A$X$HJQ99$5$1!"J8;zI}$O=>Mh$O%U%)%s%H%5%$%:$N 50% $H8+ $J$7$F$$$^$7$?$,!"8=:_$O 60% $HI>2A$7$F$$$^$9!#$h$jB?$/$N Postscript $N@~<o$d5-9f$b;H$o$1$^$9!#0JA0$N >uBV$K$[$\Ey$7$$>uBV$K$9$k$K$O%*%W%7%g%s **oldstyle** $r;XDj$7$F$/$@$5$$!#(<B:]$K$O$4$/$o$:$+$J0c$$,;D $j$^$9: 5-9f$N%5%$%:$,$o$:$+$K0c$$!"L\@99o$_ (tics) $O=>Mh$NH>J,$K$J$C$F$$$^$9$,$=$1$O **set tics scale** $GJQ99$G$-$^$9!#$=$7$FLp (arrow) $K4X$7$F$Opostscript =PNO7A<0$G;H$ ($kA4$F$N5!G=$,MxMQ$G$-$^$9!#)

0J2<$N$h$&$J%(%i!<%a%C%;!<%8$,=P$?>19g:

    "Can't find PostScript prologue file ... "

0J2<;2>H: **postscript prologue (p. 245)**!#$=$7$F$=$N;X<($K=>$C$F$/$@$5$$!#

%*%W%7%g%s **color** $O%+%i!<$rM-8z$K$7!"**monochrome** $O3FMWAG$r9u$HGrIA2h$7$^$9!#$5$i$K!"**monochrome** $O3%?'$N **palette** $b;HMQ$7$^$9$,!"$3$1$O!"L@<(E*$K **colorspec** $G;XDj$5$1$?ItI$N?'$rJQ99$7$^$;$s!#

**dashlength** $^$?$O **dl** $OE@@~$N@~J,$ND9$5$r <DL> (0 $h$jBg$-$$<B?t) $K@_Dj$7!"**linewidth** $^$?$O **lw** $OA4$F$N@~$NI}$r <LW> $K@_Dj$7$^$9!#

%G%U%)%k%H$G$O!"@8@.$5$1$k PostScript %3!<%I$O!"FC$K%U%#%k%?%j%s%0$dfilledcurves $N$h$&$J$G$3$\$3$JNN 0h$N%Q%?!<%sEI$j$D$V$7$K$*$$$F!"PostScript Level 2 $H$7$F>R2p$5$1$F$$$k8@8l5!G=$r;H$$$^$9!#PostScript Level 2 $N5!G=$O>r7oE*$KJ]8n$5$1$F$$$F!"PostScript Level 1 $N%$%s%?!<%W%j%?$,%(%i!<$r=P$5$:!"$`$7$m %a%C%;!<%8$+PostScript Level 1 $K$h$k6a;w$G$"$k$3$H$rI=<($9$k$h$&$K$J$C$F$$$^$9!#**level1** %*%W%7%g%s$O!" $3$1$i$N5!G=$r6a;w$9$k PostScript Level1 $GBeMQ$7!"PostScript Level 2 %3!<%I$r01@Z;HMQ$7$^$;$s!#$3$1$O 8E$$%W%j%s%?$d!"Adobe Illustrator $N8E$$%P!<%8%g%s$J$I$GI,MW$K$J$k$+$b$7$1$^$;$s!#$3$N%U%i%0 **level1** $O=PNO$5$1$?PostScript %U%!%$%k$N$"$k019T$r<j$GJT=8$9$k$3$H$G!"8e$+$i6/@)E*$K PostScript Level 1 5!G= $r ON/OFF $K$9$k$3$H$b$G$-$^$9!#level 2 $N%3!<%I$,4^$^$1$F$$$k>19g!">e$N5!G=$O8=$o$1$J$$+!"$3$N%U %i%0$,%;%C%H$5$1$?>19g!"$"$k$$$O PostScript %$%s%?%W%j%?%W%m%0%i%`$,, level 2 0J>e$N PostScript $r2r<a $9$k$H$O8@$o$J$+$C$?>19g$K7Y9pJ8$KCV$-49$o$j$^$9!#**level3** %*%W%7%g%s$O!"%S%C%H%^%C%W2hA|$N PNG 2=$N 5!G=$rM-8z$K$7$^$9!#$=$1$K$h$j=PNO%5%$%:$r$+$J$j:o8:$G$-$^$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7!"%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

**clip** $O!"PostScript $K$9$Y$F$N=PNO$r BoundingBox (PostScript $N3OOH) $G%/%j%C%W$9$k$3$H$r;X<($7$^$9; %G%U%)%k%H$O **noclip** $G$9!#

**palfuncparam** $O **set palette functions** $+$i=PNO$N79$-$r$I$N$h$&$K%3!<%I2=$9$k$+$r@)8f$7$^$9!#2r@O E*$J?'$N@.J,4X?t (**set palatte functions** $G@_Dj$5$1$k) $O!"postscript =PNO$G$O79$-$N@~7AJd40$rMQ$$$F %3!<%I2=$5$1$^$9: $^$:?'$N@.J,4X?t$, <samples> 8D$NE@$GI8K\2=$5$1!"$=$7$F$=$1$i$NE@$O!"7k2L$H$7$F @~7AJd40$H$NJP:9$, <maxdeviation> 0JFb$K<}$^$k$h$&$K:o=|$5$1$^$9!#$[$H$s$IA4$F$NM-8z$J%Q%1%C%H$G!" %G%U%)%k%H$N <samples> =2000 $H <maxdeviation>=0.003 $NCM$r$=$N$^$^;H$&$N$,NI$$$G$7$g$&!#

PostScript =PNO$N%G%U%)%k%H$NBg$-$5$O10 %$%s%A x 7 %$%s%A$G$9!#EPS =PNO$N%G%U%)%k%H$NBg$-$5$O5 x 3.5 %$%s%A$G$9!#%*%W%7%g%s **size** $O$3$1$i$r%f!<%6$,;XDj$7$?$b$N$KJQ99$7$^$9!#%G%U%)%k%H$G$O X $H Y $N%5%$ %:$NC10L$O%$%s%A$H$_$J$5$1$^$9$,!"B>$NC10L (8=:_$O cm $N$_) $b;H$&$3$H$O$G$-$^$9!#IA2h$N BoundingBox (PostScript %U%!%$%k$N3OOH) $O!"%5%$%:$,JQ99$5$1$?2hA|$rCzEY4^$`$h$&$K@5$7$/@_Dj$5$1$^$9!#%9%/%j!<%s :BI8$O!"%*%W%7%g%s **size** $G;XDj$5$1$?IA2hOH$NA4BN$, 0.0 $+$i 1.0 $K$J$j$^$9!#Cm0U: $3$1$O!"0JA0$O!"=PNO 7A<0$G$N@_Dj$h$j$b!"%3%^%s%I **set size** $G@_Dj$7$?J}$,$$$$!"$H8@$C$F$$$?$3$H$NJQ99$r0UL#$7$^$9!#0JA0 $NJ}K!$G$O BoundingBox $OJQ99$5$1$:$K;D$C$F$7$^$$!"%9%/%j!<%s:BI8$,<B:]$NIA2h$N8B3&$KBP1~$7$F$$$^ $;$s$G$7$?!#

**blacktext** $O!"$?$H$(%+%i!<%b!<%I$G$bA4$F$NJ8;zNs$r9u$G=q$-$^$9!#

epslatex %I%i%$%P$OJ8;zNs$NG[CV$N@)8f$KFCJL$JJ}K!$rDs6!$7$^$9: (a) '{' $G;O$^$kJ8;zNs$O!"'}' $GJD$8$k I,MW$,$"$j$^$9$,!"$=$NJ8;zNsA4BN$,LaTeX $K$h$C$F?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0$5$l$^$9!#(b) '[' $G;O$^$kJ8;zNs$N>l9g$O!"0LCV$N;XDj$r$9$kJ8;zNs (t,b,l,r,c $N$&$A2 $D$^$G) $,B3$-!"<!$K ']{' !"J8;zNsK\BN!"$G:G8e$K '}' $H$7$^$9$,!"$3$NJ8;zNs$O LaTeX $,LR-box $H$7$F@07A$7$^$9!#\rule{}{} $r;H$($P$5$i$KNI$$0LCV9g$o$;$,2DG=$G$7$g$&!#0J2<$b;2>H: %I%i%$%P **pslatex (p. 245)** $K4X$9$k@bL@!#J#?t9T$N8+=P$7$r:n@.$9$k$K$O \shortstack $r;HMQ$7$F$/$@$5$$!#Nc$($P!"

```
set ylabel '[r]{\shortstack{first line \\ second line}}'
```

**set label** %3%^%s%I$N%*%W%7%g%s **back** $O;H$($^$9$,!"B>$N=PNO7A<0$N$b$N$H$O>/$70c$C$F$$$^$9!#**front** $N>l9g$N8+=P$7$,B>$NA4$F$NMWAG$N>e$K=PNO$5$l$k$N$KBP$7$F!"**back** $r;H$C$?8+=P$7$OB>$NA4$F$NMWAG$N2<$K=PNO$5$l$^$9!#

$3$N%I%i%$%P$O2 $D$NJL$N%U%!%$%k$r:n$j$^$9!#1 $D$O?^$Neps $NItJ,$G!"$b$&0l$D$O LaTeX $NItJ,$G$9!#LaTeX %U%!%$%k$NL>A0$O!"**set output** %3%^%s%I$N$b$N$,;H$o$l!"eps %U%!%$%k$NL>A0$O$=$N3HD%;R (DL>o .tex) $r **.eps** $KCV$-49$($?$b$N$K$J$j$^$9!#=PNO%U%!%$%k$r;XDj$7$J$1$l$P LaTeX =PNO$O9T$J$o$l$^$;$s!**multiplot** %b!<%I0J30$G$O!"<!$NIA2h$r9T$J$&A0$K$=$N=PNO%U%!%$%k$r%/%m!<%:$9$k$N$rK:$l$J$$$G$/$@$5$$!#

LaTeX $NJ8=q$G?^$r<h$j9~$`$K$O '\input{filename}' $H$7$F$/$@$5$$!#**eps** %U%!%$%k$O \includegraphics{...} %3%^%s%I$G<h$j9~$`$N$G!"$h$C$F LaTeX $N%W%j%"%s%V%k$K \usepackage{graphicx} $bF~$l$kI,MW$,$"$j$^$9!#**textcolour** %*%W%7%g%s$G?'IU$-$NJ8;zNs$r;HMQ$7$F$$$k>l9g$O!"LaTeX $N%W%j%"%s%V%k$K \usepackage{color} $bF~$l$kI,MW$,$"$j$^$9!#

$3$N eps %U%!%$%k$+$i 'epstopdf' $r;H$C$F pdf %U%!%$%k$r:n$k$3$H$b$G$-$^$9!#graphics %Q%C%1!<%8$,E,@Z$K@_Dj$5$l$F$$$k>l9g!"$=$N LaTeX $N%U%!%$%k$O!"JQ99$J$7$K pdflatex $K$h$C$F$b=hM}$G$-!"$=$N>l9g eps %U%!%$%k$NBe$o$j$K pdf %U%!%$%k$,<h$j9~$^$l$^$9!#

%U%)%s%H$NA*Br$K4X$9$k5sF0$O%X%C%@!<%b!<%I$K0MB8$7$^$9!#$I$N>l9g$G$b!"M?$($i$l$?%U%)%s%H%5%$%:$O%9%Z!<%9$N7W;;$K$A$c$s$H;HMQ$5$l$^$9!#**standalone** %b!<%I$,;H$o$l$J$+$C$?>l9g$O!"include $5$l$k>l=j$G$N<B:]$N LaTeX %U%)%s%H$H%U%)%s%H%5%$%:$,;H$o$l$k$N$G!"$h$C$F%U%)%s%H$NJQ99$K$O LaTeX %3%^%s%I$r;H$C$F$/$@$5$$!#Nc$($P%U%)%s%H%5%$%:$H$7$F LaTeX J8=qCf$G 12pt $r;H$&>l9g$O!"%*%W%7%g%s '"" 12' $r;H$$$^$9!#$3$N>l9g%U%)%s%HL>$OL5;k$5$l$^$9!#**standalone** $r;H$&>l9g$O!"M?$($i$l$?%U%)%s%H$H%U%)%s%H%5%$%:$,;H$o$l$^$9!#>\:Y$O2<5-$r;2>H$7$F$/$@$5$$!#

J8;zNs$,%+%i!<$GI=<($5$l$k$+$I$&$+$O TeX $N Bool CMJQ?t \ifGPcolor $H \ifGPblacktext $G@)8f$7$^$9!#\ifGPcolor $, true $G \ifGPblacktext $, false $N>l9g$N$_J8;zNs$O%+%i!<$GI=<($5$l$^$9!#$=$l$i$O@8@.$5$l$k TeX %U%!%$%k$rJQ99$9$k$+!"$^$?$O$"$J$?$N TeX %U%!%$%k$GBg0hE*$KM?$($F$/$@$5$$!#Nc$($P

```
\newif\ifGPblacktext
\GPblacktexttrue
```

$r$"$J$?$N%U%!%$%k$N%W%j%"%s%V%k$K=q$-$^$9!#ItJ,E*$J;XDj$OBg0hE*$JCM$,M?$($i$l$F$$$J$$$H$-$N$_F/$-$^$9!#

epslatex =PNO7A<0$r;H$&>l9g!"**set output** %3%^%s%I$G TeX %U%!%$%k$NL>A0$r3HD%;RIU$-(DL>o ".tex") $GM?$($F$/$@$5$$!#eps %U%!%$%k$NL>A0$O$=$N3HD%;R$r ".eps" $KCV$-49$($?L>A0$K$J$j$^$9!#

**standalone** %b!<%I$r;H$&>l9g!"$=$N LaTeX %U%!%$%k$K40A4$J LaTeX $N%X%C%@$,IU2C$5$l!"eps %U%!%$%k$N%U%!%$%kL>$K$O "-inc" $,DI2C$5$l$^$9!#**standalone** %b!<%I$O!"dvips, pdfTeX, VTeX $r;H$&>l9g$K@5$7$$%5%$%:$G=PNO$5$l$k$h$&$J TeX %U%!%$%k$r:n$j$^$9!#%G%U%)%k%H$O **input** %b!<%I$G!"$3$l$O \input %3%^%s%I $r;H$C$F!"JL$N

LaTeX %U%!%$%k$+$iF I$_9~$^$l$k$h$&$J%U%!%$%k$r@8@.$7$^$9!#

"" $+ "default" 0J30$N%U%)%s%HL>$,M?$($i$l$?>l9g!"$=$l$O LaTeX $N%U%)%s%HL>$H2r<a$5$l$^$9!#$=$l$O!"'fontname,fontseries,fontshape' $N!"%3%s%^$G6h@Z$i$l$?3 $D0J2<$NItJ,$+$i$J$j$^$9!#%G%U%)%k%H$N%U%)%s%H%7%'%$%W!"%U%)%s%H%7%j!<%:$,;H$$$?$$>l9g$O$=$l$i$O>JN,$G$-$^$9!#$D$^$j!"%U%)%s%HL>$KBP$9$k@5<0$J=q<0$O!"'[fontname][,fontseries][,fontshape]' $H$J$j$^$9!#$=$N$$$:$l$NItJ,$bL>A0$K4X$7$F$O LaTeX $N%U%)%s%HBN7O$N47=,$K=>$$$^$9!#fontname $O3 $+$i4 J8;z$ND9$5$G!"<!$N$h$&$J5,B'$G:n$i$l$F$$$^$9: 1 $DL\$,%U%)%s%H$N@=B$85$rI=$7!"<!$N2 $D$,%U%)%s%HL>!"%*%W%7%g%s$GDI2C$5$l$k1 $D$OFCJL$J%U%)%s%H$r0UL#$7!"Nc$($P 'j' $O5l<0$N?t;z$r;}$D%U%)%s%H!"'x' $O expert %U%)%s%HEy$H$J$C$F$$$^$9!#0J2<$K$O!"B?$/$N%U%)%s%H$NL>A0$K$D$$$F=q$+$l$F$$$^$9!#http://www.tug.org/fontname/fontname.pdf

Nc$($P 'cmr' $O Computer Modern Roman %U%)%s%H!"'ptm' $O Times-Roman, 'phv' $O Helvetica Ey$rI=$7$^$9!#%U%)%s%H%7%j!<%:$OJ8;z$N@~$NB@$5$r0UL#$7!"BgH>$O 'm' $GI aDL ("medium")!"'bx' $^$?$O 'b' $,B@;z (bold) %U%)%s%H$r0UL#$7$^$9!#%U%)%s%H%7%'%$%W$O0lHL$K'n' $,N)BN (upright)!"'it' $O%$%?%j%C%/!"'sl' $O<PBN (slanted)!"'sc' $O>.$5$$BgJ8;z (small caps) $H$J$j$^$9!#$3$l$i$H$O0[$J$k%U%)%s%H%7%j!<%:$d%U%)%s%H%7%'%$%W$GM?$($i$l$k%U%)%s%H$bB8:_$7$^$9!#

Nc:

Times-Roman $GB@;z (%7%'%$%W$O<~$j$NJ8;zNs$HF1$8$b$N) $r;H$&>l9g:

```
set terminal epslatex 'ptm,bx'
```

Helvetica $GB@;z$G%$%?%j%C%/$r;H$&>l9g:

```
set terminal epslatex 'phv,bx,it'
```

<PBN$N%7%'%$%W$G<~$j$N%U%)%s%H$r;H$$B3$1$k>l9g:

```
set terminal epslatex ',,sl'
```

>.7?$NBgJ8;z (small caps) $r;H$&>l9g:

```
set terminal epslatex ',,sc'
```

$3$NJ}K!$G$OJ8;zNs$N%U%)%s%H$N$_$,JQ99$5$l$^$9!#?t<0$N%U%)%s%H$bJQ99$7$?$$>l9g$O!""gnuplot.cfg" %U%!%$%k$+$^$?$O **header** %*%W%7%g%s$r;H$&I,MW$,$"$j$^$9$,!"$3$l$K$D$$$F$O0J2<$K=q$-$^$9!#

standalone %b!<%I$G$O!"%U%)%s%H%5%$%:$O **set terminal** %3%^%s%I$GM?$($i$l$?%U%)%s%H%5%$%:$,;H$o$l$^$9!#;XDj$7$?%U%)%s%H%5%$%:$,;H$($k$?$a$K$OLaTeX $N8!:w%Q%9$K "size<size>.clo" $H$$$&%U%!%$%k$,B8:_$7$J$1$l$P$J$j$^$;$s!#%G%U%)%k%H$G$O 10pt, 11pt, 12pt $,%5%]!<%H$5$l$F$$$^$9!#%Q%C%1!<%8 "extsizes" $,%$%s%9%H!<%k$5$l$F$$$l$P!"8pt, 9pt, 14pt, 17pt, 20pt $bDI2C$5$l$^$9!#

%*%W%7%g%s **header** $OJ8;zNs0z?t$r<h$j$^$9!#$=$NJ8;zNs$O!"@8@.$5$l$k LaTeX %U%!%$%k$K=q$-9~$^$l$^$9!# **standalone** %b!<%I$r;H$&>l9g!"$=$NJ8;zNs$O%W%j%"%s%V%k$N \begin{document} %3%^%s%I$ND>A0$K=q$-9~$^$l$^$9!# **input** %b!<%I$G$O!"$=$NJ8;zNs$O \begingroup %3%^%s%I$ND>8e$KCV$+$l!"IA2h$X$N@_Dj$,$9$Y$F6I=jE*$K$J$k$h$&$K$7$^$9!#

Nc:

T1 %U%)%s%H% (%s%3!<%G%#%s%0$r;H$$!"J8;zNs!"?t<0%U%)%s%H$r Times-Roman $H$7!"%5%s%;%j%U%U%)%s%H$r Helvetica $HJQ99$9$k>l9g:

```
set terminal epslatex standalone header \
"\\usepackage[T1]{fontenc}\n\\usepackage{mathptmx}\n\\usepackage{helvet}"
```

IA2h$N30$NJ8;zNs$K$O1F6A$rM?$($J$$$h$&$KIA2hFb$GB@;z (boldface) %U%)%s%H$r;H$&>l9g:

```
set terminal epslatex input header "\\bfseries"
```

%U%!%$%k "gnuplot.cfg" $, LaTeX $K$h$C$F8+$D$1$i$l$k$H!"**standalone** %b!<%I$r;H$C$F$$$k>l9g$O!"$=$l$O@8@.$5$l$k LaTeX J8=q$N%W%j%"%s%V%k$K<h$j9~$^$l$^$9!#$=$l$OD|2C$N@_Dj$r9T$J$&$N$K;H$($^$9!#Nc$($P!"J8=q$N%U%)%s%H$r TImes-Roman, Helvetica, Courier $HJQ99$7!"("mathptmx.sty" $G07$o$l$F$$$k) ?t<0%U%)%s%H$rF~$l$k>l9g:

```
\usepackage{mathptmx}
\usepackage[scaled=0.92]{helvet}
\usepackage{courier}
```

%U%!%$%k "gnuplot.cfg" $O **header** %3%^%s%I$GM?$($i$l$k%X%C%@>pJs$NA0$KFI$_9~$^$l$^$9!#$h$C$F!""gnuplot.cfg" $G9T$J$o$l$k@_Dj$N$$$/$D$+$r **header** $r;H$C$F>e=q$-$9$k$3$H$,$G$-$^$9!#

## Epson_180dpi

Cm0U: gnuplot $, --with-bitmap-terminals $G:n$i$l$?>l9g$N$_;H$($^$9!#$3$N%I%i%$%P$O% (%W%=%s%W%j%s%?$N$$$/$D$+$H$=$l$KN`;w$9$k$b$N$r%5%]!<%H$7$^$9!#

**epson_180dpi** $H **epson_60dpi** $O$=$l$>$l 180dpi (%I%C%H/%$%s%A), 60dpi $N2rA|EY$N Epson LQ 7?24 %T%s%W%j%s%?MQ$N%I%i%$%P$G$9!#

**epson_lx800** $O Epson LX-800, Star $N NL-10 $d NX-1000, PROPRINTER $J$I$NE,Ev$J%W%j%s%?$KN.MQ$G$-$k!"0lHLE*$J9 %T%s%W%j%s%?%I%i%$%P$G$9!#

**nec_cp6** $O NEC CP6 $d Epson LQ-800 $J$I$N%W%j%s%?$G;H$($k!"0lHLE*$J24 %T%s%W%j%s%?MQ$N%I%i%$%P $G$9!#

**okidata** %I%i%$%P$O 9 %T%s$N OKIDATA 320/321 I8='%W%j%s%?$r%5%]!<%H$7$^$9!#

**starc** %I%i%$%P$O Star %+%i!<%W%j%s%?MQ$G$9!#

**tandy_60dpi** %I%i%$%P$O 9 %T%s 60dpi $N Tandy DMP-130 %7%j!<%:MQ$G$9!#

**dpu414** %I%i%$%P$O Seiko DPU-414 46G.%W%j%s%?MQ$G$9!#

**nec_cp6** $K$O%*%W%7%g%s$,$"$j$^$9:

=q<0:

```
set terminal nec_cp6 {monochrome | colour | draft}
```

%G%U%)%k%H$G$OGr9u (monochrome) $G$9!#

**dpu414** $K$O%*%W%7%g%s$,$"$j$^$9:

=q<0:

```
set terminal dpu414 {small | medium | large} {normal | draft}
```

%G%U%)%k%H$O medium (= %U%)%s%H%5%$%:) $G normal $G$9!#$*$9$9$a$NAH$_9g$o$;$O!"**medium normal** $+ **small draft** $G$9!#

## Excl

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9!#**excl** %I%i%$%P$O EXCL %l!<%6!<%W%j%s%?!<$d 1590 $N$h$&$J Talaris %W%j%s%?$r%5%]!<%H$7$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Fig

**fig** %I%i%$%P$O Fig %0%i%U%#%C%/8@8l$G$N=PNO$r@8@.$7$^$9!#

=q<0:

```
set terminal fig {monochrome | color}
                 {landscape | portrait}
                 {small | big | size <xsize> <ysize>}
                 {metric | inches}
                 {pointsmax <max_points>}
                 {solid | dashed}
                 {font "<fontname>{,<fontsize>}"}
                 {textnormal | {textspecial texthidden textrigid}}
                 {{thickness|linewidth} <units>}
                 {depth <layer>}
                 {version <number>}
```

**monochrome** $H **color** $O 2hA|$rGr9u$K$9$k$+ **color** $K$9$k$+$r7hDj$7$^$9!#**small** $H **big** $O!"%G%U%)%k%H$N **landscape** %b!<%I$G$O%0%i%U$r 5x3 %$%s%A$K$9$k$+ 8x5 %$%s%A$K$9$k$+!"**portrait** %b!<%I$G$O 3x5 %$%s%A$K$9$k$+ 5x8 %$%s%A$K$9$k$+$r7hDj$7$^$9!#**size** $OIA2hHO0O$r <xsize>*<ysize> $K@_Dj (JQ99) $7$^$9!#$3$N>l9g$NC10L$O!"**inches** $+ **metric** $+$N@_Dj$K$h$C$F$=$l$>$l%$%s%A$+%;%s%A%a!<%H%k$+$K$J$j$^$9!#$3$N@_Dj$O "xfig" $G$NJT=8$KBP$9$k%G%U%)%k%H$NC10L$H$7$F$b;H$o$l$^$9!#

**pointsmax <max_points>** $O@^$l@~$N:GBgE@?t$r@_Dj$7$^$9!#

**solid** $O!"<B@~ (solid) $N linestyle $,A4It;H$o$l$F$7$^$C$?8e$G<+F0E*$K;H$o$l$kE@@~$N;HMQ$rM^@)$7!"JL$J7A$GI=<($7$^$9!#

**font** $O!"%F%-%9%H%U%)%s%H%U%'!<%9L>$r <fontname> $K!"%U%)%s%H%5%$%:$r <fontsize> %]%$%s%H$K@_Dj$7$^$9!#**textnormal** $O%F%-%9%H%U%i%0$N@_Dj$r%j%;%C%H$7$F postscript %U%)%s%H$rA*Br$7!"**textspecial** $O%F%-%9%H%U%i%0$r LaTeX special $K@_Dj$7!"**texthidden**, **textrigid** $O$=$l$>$lL5I=<($N%F%-%9%H!"%9%1!<%j%s%0$5$l$J$$%F%-%9%HMQ$N%U%i%0$r@_Dj$7$^$9!#

**depth** $OA4$F$N@~$HJ8;zNs$KBP$9$k!"=E$J$j$K4X$9$k%G%U%)%k%H$N?<$5 (depth layer) $r@_Dj$7$^$9!#%G%U%)%k%H$N?<$5$O 10 $G!""xfig" $G%0%i%U$N>e$K2?$+$r>e=q$-$9$k$?$a$NM>CO$r;D$7$F$$$^$9!#

**version** $O@8@.$5$l$k fig =PNO$N=q<0%P!<%8%g%s$r@_Dj$7$^$9!#8=:_$O!"%P!<%8%g%s 3.1 $H 3.2 $N$_$,%5%]!<%H$5$l$F$$$^$9!#

**thickness** $O%G%U%)%k%H$N@~$NB@$5$r@_Dj$7!";XDj$5$l$J$1$l$P 1 $K$J$j$^$9!#B@$5$NJQ99$O!"**plot** %3%^%s%I$N **linetype** $NCM$K 100 G\$N?t$r2C$($k$3$H$G<B8=$G$-$^$9!#F1MM$K!"(%G%U%)%k%H$N?<$5$KBP$9$k) 3FIA2hMWAG$N?<$5$NCM$O <linetype> $K 1000 G\$N?t$r2C$($k$3$H$G@)8f$G$-$^$9!#$h$C$F$=$N?<$5$O <layer>+<linetype>/1000 $K$J$j!"@~$NB@$5$O (<linetype>%1000) /100 $H$J$j$^$9$,!"$=$NCM$,0 $N>l9g $O%G%U%)%k%H$N@~$NB@$5$K$J$j$^$9!#**linewidth** $O **thickness** $HF15A$G$9!#

**plot** %3%^%s%I$N **point** %9%?%$%k$K$h$kIA2h$N:]$N5-9f$r **fig** %I%i%$%P$GDI2C$9$k$3$H$b$G$-$^$9!#5-9f$N;XDj$O (**pointtype** $NCM) % 100 $N50 0J>e$NCM$,;H$o$l!"$=$NEI$j$D$V$7$NG;$5$O <pointtype> % 5 $NCM$G@)8f$7!"$=$NNX3T$O9u (<pointtype> % 10 < 5 $N>l9g) $^$?$O8=:_$N?'$G=q$+$l$^$9!#MxMQ2DG=$J5-9f$OJ2<$NDL$j$G$9!#

```
50 - 59:  1_
60 - 69:  @5J}7A
70 - 79:  $R$77A
80 - 89:  >e8~$-$N;03Q7A
90 - 99:  2<8~$-$N;03Q7A
```

$3$l$i$N5-9f$NBg$-$5$O%U%)%s%H$NBg$-$5$H4X78$7$F$$$^$9!#%G%U%)%k%H$G$O5-9f$N?<$5$O!"NI$$%(%i!<%P!<$r<B8=$9$k$?$a$K!"@~$N?<$5$h$j 1 $@$1>.$5$$CM$K$J$C$F$$$^$9!#<pointtype> $,1000 $h$jBg$-$$>l9g!"?<$5$O <layer> +<pointtype>/1000-1 $K$J$j$^$9!#<pointtype>%1000 $,100 $h$jBg$-$$>l9gEI$j$D$V$7?'$O (<pointtype>%1000)/100-1 $K$J$j$^$9!#

M-8z$JEI$j$D$V$7?' (1 $+$i 9) $O!"9u!"@D!"NP!"?e?'!"@V!";g!"2+!"Gr!"0E$$@D (Gr9u%b!<%I$G$O 1 $+$i 6 $^$G$O9u$G 7 $+$i 9 $^$G$OGr) $G$9!#

<linetype> $H <pointtype> $N>\:Y$K$D$$$F$O!"0J2<;2>H: **plot with (p. 106)**!#

**big** %*%W%7%g%s$OO0JA0$N%P!<%8%g%s$N **bfig** %I%i%$%P$NBeMQI$J$G$9$,!"$3$N%I%i%$%P$O:#$O$b$&%5%]!<%H$5$l$F$$$^$;$s!#

Nc:

```
set terminal fig monochrome small pointsmax 1000  # %G%U%)%k%H

plot 'file.dat' with points linetype 102 pointtype 759
```

$O!"2+?'$GEI$j$D$V$5$l$?1_$r@8@.$7!"$=$l$iNX3T$OI}1 $N@D$$@~$G$9!#

```
plot 'file.dat' using 1:2:3 with err linetype 1 pointtype 554
```

$O9u$$@~$K$h$k% (%i!<%P!<$H@V$GEI$j$D$V$5$l$?1_$r@8@.$7$^$9!#$3$N1_$O@~$h$j$b 1 AX$@$1>e$K$J$j$^$9 (%G%U%)%k%H$G$O?<$5$O 9)!#

1_$N>e$K% (%i!<%P!<$r=q$/$K$O0J2<$N$h$&$K$7$F$/$@$5$$!#

```
plot 'file.dat' using 1:2:3 with err linetype 1 pointtype 2554
```

## Ggi

$3$l$O GGI (General Graphics Interface) %W%m%8%'%/%HMQ$N8E$$ (legacy) =PNO%I%i%$%P$G$9!#

=q<0:

```
set terminal ggi [acceleration <integer>] [[mode] {mode}]
```

X $G$O!"%&%#%s%I%&%^%M!<%8%c$N5!G=$r;H$C$F%&%#%s%I%&$N%5%$%:$rJQ99$9$9$k$3$H$O$G$-$^$;$s$,!"%b!<%I$r mode %*%W%7%g%s$r;H$C$F!"Nc$($P0J2<$N$h$&$KJQ99$9$9$k$3$H$,$G$-$^$9:

- V1024x768
- V800x600
- V640x480
- V320x200

B>$N%b!<%I$K$D$$$F$O!"ggi (libggi) $N%I%-%e%a%s%H$r;2>H$7$F$/$@$5$$!#%-!<%o!<%I **mode** $CDI2C$7$F$b$7 $J$/$F$b7k9=$G$9!#libggi $N%^%K%e%"%k%Z!<%8$G>R2p$5$l$F$$$k$h$&$K!"4D6-JQ?t$G%?!<%2%C%H$rA*Br$9$k$3 $H$r$*4+$a$7$^$9!#X >e$G DGA $r;H$&$J$i!"Nc$($P0J2<$N$h$&$K$7$F$/$@$5$$!#

```
bash> export GGI_DISPLAY=DGA
csh>  setenv GGI_DISPLAY DGA
```

**acceleration** $O!"A jBPE*$J%]%$%s%?F0:n%$%Y%s%H$rH/@8$9$k%?!<%2%C%H (Nc$($P DGA) $G$N$_;HMQ$5$l!"@5 $N@0?t$GA jBPE*$J5wN%$KBP$9$kG\N((@Q0x;R) $rI=$7$^$9!#%G%U%)%k%H$N acceleration $O 7 $G$9!#

Nc:

```
set term ggi acc 10
set term ggi acc 1 mode V1024x768
set term ggi V1024x768
```

## Gif

=q<0:

```
set terminal gif
       {{no}enhanced}
       {{no}transparent} {rounded|butt}
       {linewidth <lw>} {dashlength <dl>}
       {tiny | small | medium | large | giant}
       {font "<face> {,<pointsize>}"} {fontscale <scale>}
       {size <x>,<y>} {{no}crop}
       {animate {delay <d>} {loop <n>} {{no}optimize}}
       {background <rgb_color>}
```

PNG, JPEG, GIF 2hA|$O!"3 0It%i%$%V%i%j libgd $r;H$C$F@8@.$5$l$^$9!#GIF $NIA2h$O!"ImageMagick %Q%C %1!<%8$N%=%U%H 'display' $K$=$N=PNO$r0J2<$N$h$&$K%Q%$%W$GEO$9$3$H$GBPOCE*$KI=<($5$;$k$3$H$,$G$-$^$9:

```
set term gif
set output '| display gif:-'
```

<!$NIA2h%3%^%s%I$+$i$N=PNO$O!"display %&%#%s%I%&>e$GBPOCE*$K <space> $rBG$D$3$H$G8+$k$3$H$,$G$-$^ $9!#8=:_$NIA2h$r%U%!%$%k$KJ]B8$9$k$K$O!"display %&%#%s%I%&$G: 8%/%j%C%/$7!"**save** $rA*Br$7$F$/$@$5$$!#

**transparent** $O!"%I%i%$%P$KGX7J?'$NF)L@2=(transparent) $r9T$&$h$&;X<($7$^$9!#%G%U%)%k%H$O **notransparent** $G$9!#

%*%W%7%g%s **linewidth** $H **dashlength** $O3HBgN($G!"IA2h$5$l$k$9$Y$F$N@~$K1F6A$rM?$($^$9!#$9$J$o$A!"$3 $l$i$OMM!9$JIA2h%3%^%s%I$GMW5a$5$l$kCM$K$+$1;;$5$l$^$9!#

**butt** $O@~J,$NIA2h$G!"$=$NC<$NE@$G$N$O$_$@$7$r5/$3$5$J$$IA2h%a%=%C%I$r;H$&$h$&%I%i%$%P$K;X<($7$^$9!# $3$N@_Dj$O!"@~I}$, 1 $h$jBg$-$$>l9g$K$N$_M-8z$G$9!#$3$N@_Dj$O!"?eJ?@~!"?bD>@~$NIA2h$N>l9g$KM-MQ$G $7$g$&!#%G%U%)%k%H$O **rounded** (4]$a) $G$9!#

%U%)%s%H$NA*Br$N>\:Y$O!"$d$dJ#;($G$9!#0J2<$KF1$80UL#$r;}$D4JC1$JNc$r<($7$^$9:

```
set term gif font arial 11
set term gif font "arial,11"
```

$h$j>\$7$$>pJs$K$D$$$F$O!"**fonts** $N2<$N3:Ev$9$k%;%/%7%g%s$r;2>H$7$F$/$@$5$$!#

%*%W%7%g%s **animate** $O$"$J$?$N<j85$K$"$k gd %i%$%V%i%j$,%"%K%a!<%7%g%s gif $N:n@.$r%5%]!<%H$9$k>l9g$K $N$_M-8z$G$9!#:n@.$5$l$k2hA|$NI=<(4V3V$O!"1/100 ICC10L$G;XDj$G$-$^$9 (%G%U%)%k%H$O 5)!#$?$@$7<B:]$N I=<(4V3V$O!";HMQ$9$kI=<(%=%U%H$K$h$C$FJQ2=$7$^$9!#%"%K%a!<%7%g%s$N7+$jJV$72s?t$b;XDj$G$-$^$9$,!"%G %U%)%k%H$O 0 $G$=$l$OL58B$N7+$jJV$7$r0UL#$7$^$9!#%"%K%a!<%7%g%s2hA|Ns$O!"<!$N **set output** $+ **set term** %3%^%s%I$K$h$C$F=*N;$7$^$9!#%*%W%7%g%s **optimize** $O!"%"%K%a!<%7%g%s$K4X$9$k 2 $D$N8z2L$r;}$A$^$9!#

1) %"%K%a!<%7%g%sA4BN$rDL$8$FC10l$N%+%i!<%^%C%W$,;HMQ$5$l$^$9!#$3$l$O%"%K%a!<%7%g%s$NA4$F$N%U%l!<%` $G;HMQ$5$l$kA4$F$N?'$,:G=i$N%U%l!<%`$GDj5A$5$l$F$$$kI,MW$,$"$j$^$9!#

2) 2DG=$J$i$P!"8D!9$N%U%l!<%`$G0l$DA0$N%U%l!<%`$H0c$&ItJ,$N$_$,%"%K%a!<%7%g%s%U%!%$%k$KJ]B8$5$l$^$9!# $3$l$O%U%!%$%k%5%$%:$r>.$5$/$7$F$/$l$^$9$,!"F)L@2=5!G=$r;HMQ$7$F$$$k>l9g$K$OF/$+$J$$$+$b$7$l$^$;$s!#

$3$1$iN>J}$N:GE,2=$O$h$j>.$5$$%5%$%:$N=PNO%U%!%$%k$r:n$m$&$H$9$k$b$N$G$9$,!"B?J,$=$N8:>/NL$O!"D9$$%"%K%a!<%7%g%s$+$^$?$O%U%l!<%`%5%$%:$,$H$F$b>.$5$J>l9g$K$N$_0UL#$,$"$kDxEY$G$7$g$&!#%*%W%7%g%s **nooptimize** $O$3$1$i$N8z2L$r$$$:$l$bL58z$K$7$^$9!#3F%U%l!<%`$O!"8D!9$N%+%i!<%^%C%W(%W%i$%Y!<%H%+%i!<%^%C%W)$r;H$$!"4]$4$HJ]B8$5$l$F$$$-$^$9!#0l$DCm0U$7$F$*$-$^$9$,!":GE,2=$5$l$F$$J$$%"%K%a!<%7%g%s%U%!%$%k$O3 0It%f!<%F%#%j%F%#$r;H$C$F8e=hM}$9$k$3$H$,$G$-$^$9$7!"$=$N8e=hM}$K$h$C$F gnuplot $N:GE,2=$h$j$b>.$5$J%U%!%$%k$,:n$i$l$k$+$b$7$l$^$;$s!#%G%U%)%k%H$O **nooptimize** $G$9!#

=PNOIA2h%5%$%:<x,y> $O%T%/%;%kC10L$GM?$($^$9!#%G%U%)%k%H$O 640x480 $G$9!#0J2<$b;2>H: **canvas (p. 25)**, **set size (p. 169)**!#IA2h=*N;8e$NC<$NM>Gr$O!"%*%W%7%g%s **crop** $G<h$j=|$/$3$H$,$G$-!"$=$N7k2L$H$7$F$=$N2hA|%5%$%:$O>.$5$/$J$j$^$9!#%G%U%)%k%H$O **nocrop** $G$9!#

Nc

```
set terminal gif medium size 640,480 background '#ffffff'
```

$3$NNc$O medium %5%$%:$N!"Bg$-$5JQ99IT;G=$G2sE>$G$-$J$$AH$_9~$_%U%)%s%H$r;HMQ$7!"F)L@2=$5$l$J$$GX7J?'$H$7$FGr (16 ?J?t$N 24bit RGB) $r;HMQ$7$^$9!#

```
set terminal gif font arial 14 enhanced
```

$3$1$O!"'arial' $H$$$&%U%'!<%9L>$N%9%1!<%i%V%k%U%)%s%H$r8!:w$7!"%U%)%s%H%5%$%:$r 14pt $K@_Dj$7$^$9!#%U%)%s%H$N8!:w$,$I$N$h$&$K9T$o$l$k$+$K$D$$$F$O0J2<;2>H: **fonts (p. 37)**!#$3$1$O%9%1!<%i%V%k%U%)%s%H$J$N$G!"3HD%J8;zNs=hM}%b!<%I$,;HMQ$G$-$^$9!#

```
set term gif animate transparent opt delay 10 size 200,200
load "animate2.dem"
```

$3$1$O!"%"%K%a!<%7%g%s GIF %U%!%$%k$N:n@.MQ$K gif =PNO7A<0$r3+$-$^$9!#%"%K%a!<%7%g%sNs$N8D!9$N%U%l!<%`$O!"I8=`%G%b%U%!%$%k=8$K$"$k%9%/%j%W%H%U%!%$%k animate2.dem $K$h$C$F@8@.$5$l$^$9!#

## Gpic

**gpic** %I%i%$%P$O FSF (the Free Software Foundations) $N "groff" %Q%C%1!<%8$NCf$N GPIC 7A<0$N%0%i%U$r@8@.$7$^$9!#%G%U%)%k%H$NBg$-$5$O 5 x 3 %$%s%A$G$9!#%*%W%7%g%s$O8 6E@$K4X$9$k$b$N$N$_$G!"%G%U%)%k%H$G$O (0,0) $G$9!#

=q<0:

```
set terminal gpic {<x> <y>}
```

$3$3$G **x** $H **y** $NC10L$O%$%s%A$G$9!#

C1=c$J%0%i%U$r@07A$9$k$K$O0J2<$N$h$&$K$7$^$9!#

```
groff -p -mpic -Tps file.pic > file.ps
```

pic $+$i$N=PNO$O%Q%$%W$G eqn $KEO$9$3$H$b$G$-$k$N$G!"'set label' $H**set {x/y}label** %3%^%s%I$G%0%i%U$K J#;($J4X?t$N<0$rF~$l$k$3$H$b2DG=$G$9!#Nc$($P!"

```
set ylab '@space 0 int from 0 to x alpha ( t ) roman d t@'
```

$H$9$l$P!"0J2<$N%3%^%s%I$K$h$C$F y <4$Ke:No$J@QJ,$,8+=P$7IU$1$5$l$^$9!#

```
gpic filename.pic | geqn -d@@ -Tps | groff -m[macro-package] -Tps
    > filename.ps
```

$3$N$h$&$K$7$F:n$i$l$??^$OJ8=q$Ke:No$KEv$F$O$^$k$h$&$K?-=L$9$k$3$H$,$G$-$^$9!#pic 8@8l$O4JC1$KM}2r$G$-$k$N$G!"I,MW$J$iMF0W$K%0%i%U$rD>@\JT=8$G$-$^$9!#**gnuplot** $G:n$i$l$k pic %U%!%$%k$NA4$F$N:BI8$O x+gnuplotx, y+gnuploty $N7A$GM?$($i$l$^$9!#%G%U%)%k%H$G$O x, y $NCM$O 0 $G$9!#$$$/$D$+$N%U%!%$%k$KBP$7$F$=$N x,y $r 0 $H@_Dj$7$F$$$k9T$r:o=|$9$l$P!"0J2<$N$h$&$K$7$FJ#?t$N%0%i%U$r0l$D$N?^$NCf$KF~$l$F$7$^$&$3$H$b$G$-$^$9(%G%U%)%k%H$NBg$-$5$O 5.0x3.0 %$%s%A):

```
.PS 8.0
x=0;y=3
copy "figa.pic"
x=5;y=3
copy "figb.pic"
x=0;y=0
copy "figc.pic"
x=5;y=0
copy "figd.pic"
.PE
```

$3$l$O!"2#$K2 $D!"=D$K2 $D$:$DJB$s$@4 $D$N%0%i%U$+$i$J$k!"8 %$%s%A$N9-$5$N?^$r@8@.$7$^$9!#

0J2<$N$h$&$Kx, y $r;XDj$9$k$3$H$G$bF1$8$3$H$,$G$-$^$9!#

```
set terminal gpic x y
```

## Grass

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9!#**grass** %I%i%$%P$O GRASS COM}>pJs%7%9%F%`$N%f!<%6$, **gnuplot** $rMxMQ $9$k$3$H$r2DG=$K$7$^$9!#>\$7$$>pJs$K$D$$$F$O grassp-list@moon.cecer.army.mil $KO"Mm$r<h$C$F$/$@$5$$!#%Z!<%8$O GRASS %0%i%U%&%#%s%I%&$N8=:_$N%U%l!<%`$K=q$+$l$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Hp2623a

**hp2623a** %I%i%$%P$O%R%e!<%l%C%H%Q%C%+!<%I (Hewlett Packard) HP2623A $r%5%]!<%H$7$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Hp2648

**hp2648** %I%i%$%P$O%R%e!<%l%C%H%Q%C%+!<%I (Hewlett Packard) HP2647 $H HP2648 $r%5%]!<%H$7$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Hp500c

Cm0U: gnuplot $, –with-bitmap-terminals $G:n$i$l$?>l9g$N$_;H$($^$9!#**hp500c** %I%i%$%P$O%R%e!<%l%C%H%Q%C%+!<%I (Hewlett Packard) <R$N HP DeskJet 500c $r%5%]!<%H$7$^$9!#$3$l$K$O2rA|EY$H05=L$K4X$9$k%*%W%7%g%s$,$"$j$^$9!#

=q<0:

```
set terminal hp500c {<res>} {<comp>}
```

$3$3$G **res** $O 75, 100, 150, 300 $N$$$:$l$+$N2rA|EY (DPI; dots per inch) $G!"**comp** $O "rle" $+ "tiff" $G$9!#B>$N@_Dj$r$9$k$H$=$l$O%G%U%)%k%H$NCM$K$J$j$^$9!#%G%U%)%k%H$O 75 dpi $G05=L$O$J$7$G$9!#9b2rA|EY$G$N%i%9%?%i%$%:$O$?$/$5$s$N%a%b%j$rI,MW$H$7$^$9!#

## Hpgl

**hpgl** %I%i%$%P$O HP7475A %W%m%C%?$N$h$&$JAuCVMQ$N HPGL =PNO$r9T$J$$$^$9!#$3$l$O 2 $D$N@_Dj2DG=$J%*%W%7%g%s$r;}$A$^$9: $=$l$O%Z%s$N?t$H **eject** %*%W%7%g%s$G!""eject" $OIA2h8e$K%W%m%C%?$K%Z!<%8$rGS=P$5$;$k$h$&;X<($7%G%U%)%k%H$G$O 6 $D$N%Z%s$r;H$$!"IA2h8e$N%Z!<%8$NGS=P$O9T$J$$$^$;$s!#

9q:]E*J8;z%;%C%H ISO-8859-1 $H CP850 $r **set encoding iso_8859_1** $d **set encoding cp850** $GG'<1$5$;$k$3$H$,$G$-$^$9 (>\:Y$O!"0J2<;2>H: **set encoding (p. 128)**)!#

=q<0:

```
set terminal hpgl {<number_of_pens>} {eject}
```

0J2<$N@_Dj

```
set terminal hpgl 8 eject
```

$O!"0JA0$N **hp7550** %I%i%$%P$HF1Ey$G!"@_Dj

```
set terminal hpgl 4
```

$O!"0JA0$N **hp7580b** %I%i%$%P$HF1Ey$G$9!#

**pcl5** %I%i%$%P$O!"Hewlett-Packard Designjet 750C!"Hewlett-Packard Laserjet III, Hewlett-Packard Laserjet IV $N$h$&$J%W%m%C%?$r%5%]!<%H$7$^$9!#$3$l$O<B:]$K$O HPGL-2 $r;HMQ$7$F$$$k$N$G$9$,!"AuCV4V$GL>A0$N>WFM$,$"$j$^$9!#$3$N%I%i%$%P$K$O$$$/$D$+$N%*%W%7%g%s$,$"$j$^$9$,!"$=$l$i$O0J2<$K<($7$?=g=x$G;XDj$7$J$1$l$P$$$1$^$;$s:

=q<0:

```
set terminal pcl5 {mode <mode>} {<plotsize>}
    {{color {<number_of_pens>}} | monochrome} {solid | dashed}
    {font <font>} {size <fontsize>} {pspoints | nopspoints}
```

<mode> $O **landscape** $+ **portrait** $G$9!#<plotsize> $O%0%i%U$NJ*M}E*$JIA2h%5%$%:$G!"$=$l$O0J2<$N$&$A$N$$$:$l$+$G$9: **letter** $OI8=`$N(8 1/2" X 11") =PNO!"**legal** $O (8 1/2" X 14") =PNO!"**noextended** $O(36" X 48") =PNO (letter %5%$%:Hf)!"**extended** $O (36" X 55") =PNO($[$\ legal %5%$%:Hf)!#**color** $OJ#?t$N%Z%s ($9$J$o$A%+%i!<) IA2hMQ$G<number_of_pens> $O%+%i!<=PNO$G;HMQ$5$l$k%Z%s$NK\?t ($9$J$o$A?'?t) $G$9!#**monochrome** $O1 K\$N%Z%s (Nc$($P9u) $NIA2h$G$9!#**solid** $OA4$F$N@~$r<B@~$GIA$-!"**dashed** $O [$J$kE@@~$d:?@~%Q%?!<%s$G@~$rIA$-J,$1$^$9!#<font> $O **stick**, **univers**, **cg_times**, **zapf_dingbats**, **antique_olive**, **arial**, **courier**, **garamond_antigua**, **letter_gothic**, **cg_omega**, **albertus**, **times_new_roman**, **clarendon**, **coronet**, **marigold**, **truetype_symbols**, **wingdings** $N$$$:$l$+$G$9!#<fontsize> $O%]%$%s%HC10L$G$N%U%)%s%H$NBg$-$5$G$9!#E@$N<oN`(point type) $O!"**nopspoints** $r;XDj$9$k$3$H$GI8=`E*$J%G%U%)%k%H$N@_Dj$+$iA*Br$G$-$k$h$&$K$J$j$^$9$,!"**pspoints** $r;XDj$9$k$H postscript terminal $HF1$8E@$N<oN`$N@_Dj$+$iA*Br$G$-$k$h$&$K$J$j$^$9!#

$3$l$i$N%*%W%7%g%s$N$$$/$D$+$NAH$_9~$^$l$?%5%]!<%H$O!"%W%j%s%?$K0MB8$9$k$3$H$KCm0U$7$F$/$@$5$$!#Nc$($PA4$F$N%U%)%s%H$O62$i$/ HP Laserjet IV $G$O%5%]!<%H$5$l$F$$$k$G$7$g$&$,!"HP Laserjet III $H Designjet 750C $G$O 2,3 (Nc$($P univers, stick) $,%5%]!<%H$5$l$F$$$k$N$_$G$7$g$&!#$^$?!"laserjet $OGr9u$N=PNOAuCV$J$N$G!"$=$l$i$G$O%+%i!<$bL@$i$+$K;H$($^$;$s!#

%G%U%)%k%H: landscape, noextended, color (6 pens), solid, univers, 12 point, nopspoints

**pcl5** $G$O9q:]E*J8;z%;%C%H$O%W%j%s%?$G0 7$o$l$^$9$N$G!"%F%-%9%HJ8;zNs$KE,@Z$J 8-bit J8;z%3!<%I$rF~$l$k$@$1$G!"$o$6$o$6 **set encoding** $G<YKb$r$9$kI,MW$O$"$j$^$;$s!#

HPGL %0%i%U%#%C%/$OB?$/$N%=%U%H%&%'%"%Q%C%1!<%8$G<h$j9~$`$3$H$,2DG=$G$9!#

## Hpljii

Cm0U: gnuplot $, –with-bitmap-terminals $G:n$i$l$?>l9g$N$_;H$($^$9!#**hpljii** %I%i%$%P$O HP Laserjet Sries II %W%j%s%?$r!"**hpdj** %I%i%$%P$O HP DeskJet 500 %W%j%s%?$r%5%]!<%H$7$^$9!#$3$l$i$N%I%i%$%P$G$O!"2rA|EY$NA*Br$,2DG=$G$9!#

=q<0:

```
set terminal hpljii | hpdj {<res>}
```

$3$3$G **res** $O 75, 100, 150, 300 $N$$$:$l$+$N2rA|EY (DPI; dots per inch) $G!"%G%U%)%k%H$O 75 $G$9!#9b2rA|EY$G$N%i%9%?%i%$%:$O$?$/$5$s$N%a%b%j$rI,MW$H$7$^$9!#

**hp500c** %I%i%$%P$O **hpdj** $H$[$\F1$8$G$9$,!"**hp500c** $O2C$($F%+%i!<$H05=L$b%5%]!<%H$7$F$$$^$9!#

## Hppj

Cm0U: gnuplot $, –with-bitmap-terminals $G:n$i$l$?>l9g$N$_;H$($^$9!#**hppj** %I%i%$%P$O HP PaintJet $H HP3630 %W%j%s%?$r%5%]!<%H$7$^$9!#%*%W%7%g%s$O%U%)%s%H$rA*Br$9$k$b$N$,$"$k$N$_$G$9!#

=q<0:

```
set terminal hppj {FNT5X9 | FNT9X17 | FNT13X25}
```

Cf4V%5%$%:%U%)%s%H (FNT9X17) $,%G%U%)%k%H$G$9!#

## Imagen

**imagen** %I%i%$%P$O Imagen %l!<%6%W%j%s%?$r%5%]!<%H$7$^$9!#$3$l$O 1 %Z!<%8$KJ#?t$N%0%i%U$rG[CV$9$k$3$H$b2DG=$G$9!#

=q<0:

```
set terminal imagen {<fontsize>} {portrait | landscape}
                    {[<horiz>,<vert>]}
```

**fontsize** $O%G%U%)%k%H$G$O 12 %]%$%s%H$G!"%l%$%"%&%H$N%G%U%)%k%H$O**landscape** $G$9!#<**horiz**> $H <**vert**> $O%0%i%U$r2#J}8~$H=DJ}8~$K2?NsCV$/$+$r;XDj$7$^$9!#$3$l$i$N%G%U%)%k%H$O 1 $G$9!#

Nc:

```
set terminal imagen portrait [2,3]
```

$3$l$O!"1 %Z!<%8$K 6 $D$N%0%i%U$r2#$K 2 Ns!"=D$K 3 Ns!"=DCV$- (portrait) $GG[CV$7$^$9!#

## Jpeg

=q<0:

```
set terminal jpeg
       {{no}enhanced}
       {{no}interlace}
       {linewidth <lw>} {dashlength <dl>} {rounded|butt}
       {tiny | small | medium | large | giant}
       {font "<face> {,<pointsize>}"} {fontscale <scale>}
       {size <x>,<y>} {{no}crop}
       {background <rgb_color>}
```

PNG, JPEG, GIF 2hA|$O!"3 0It%i%$%V%i%j libgd $r;H$C$F@8@.$5$l$^$9!#BgDq$N>l9g!"C1 0 l$NIA2h$J$i PNG $NJ}$,8~$$$F$$$F!"GIF $O%"%K%a!<%7%g%sMQ$G$9!#$=$l$i$OB;<:$N>/$J$$2hA|7A<0$G!"B;<:$N$"$k JPEG 7A<0$h$j$b>e<A$N2hA|$r@8@.$7$^$9!#$3$l$O!"FC$K%Y%?EI$jDY$7$?GX7J$G$N%+%i!<$N<B@~!"$D$^$j$^$5$K gnuplot $,@8@.$9$kE57?E*$J2hA|$KBP$7$F$OCm0U$9$Y$-$3$H$G$9!#

%*%W%7%g%s **interlace** $O!"%W%m%0%l%C%7%V JPEG 2hA|$r@8@.$7$^$9!#%G%U%)%k%H$O **nointerlace** $G$9!#

%*%W%7%g%s **linewidth** $H **dashlength** $O3HBgN($G!"IA2h$5$l$k$9$Y$F$N@~$K1F6A$rM?$($^$9!#$9$J$o$A!"$3$l$i$OMM!9$JIA2h%3%^%s%I$GMW5a$5$l$kCM$K$+$1;;$5$l$^$9!#

**butt** $O@~J,$NIA2h$G!"$=$NC<$NE@$G$N$O$_$@$7$r5/$3$5$J$$IA2h%a%=%C%I$r;H$&$h$&%I%i%$%P$K;X<($7$^$9!#$3$N@_Dj$O!"@~I}$, 1 $h$jBg$-$$>l9g$K$N$_M-8z$G$9!#$3$N@_Dj$O!"?eJ?@~!"?bD>@~$NIA2h$N>l9g$KM-MQ$G$7$g$&!#%G%U%)%k%H$O **rounded** (4]$a) $G$9!#

%U%)%s%H$NA*Br$N>\:Y$O!"$d$dJ#;($G$9!#0J2<$KF1$80UL#$r;}$D4JC1$JNc$r<($7$^$9:

```
set term jpeg font arial 11
set term jpeg font "arial,11"
```

$h$j>\$7$$>pJs$K$D$$$F$O!"**fonts** $N2<$N3:Ev$9$k%;%/%7%g%s$r;2>H$7$F$/$@$5$$!#

=PNOIA2h%5%$%:<x,y> $O%T%/%;%kC10L$GM?$($^$9!#%G%U%)%k%H$O 640x480 $G$9!#0J2<$b;2>H: **canvas (p. 25)**, **set size (p. 169)**!#IA2h=*N;8e$NC<$NM>Gr$O!"%*%W%7%g%s **crop** $G<h$j=|$/$3$H$,$G$-!"$=$N7k2L$H$7$F$=$N2hA|%5%$%:$O>.$5$/$J$j$^$9!#%G%U%)%k%H$O **nocrop** $G$9!#

## Kyo

**kyo** $H **prescribe** $N%I%i%$%P$O Kyocera (5~%;%i) %l!<%6!<%W%j%s%?$r%5%]!<%H$7$^$9!#$3$N\T$NM#0l$N0c$$$O!"**kyo** $, "Helvetica" $r;H$&$N$KBP$7$F **prescribe** $, "Courier" $r;H$&$3$H$@$1$G$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Latex

=q<0:

```
     set terminal {latex | emtex} {default | {courier|roman} {<fontsize>}}
                  {size <XX>{unit}, <YY>{unit}} {rotate | norotate}
```

%G%U%)%k%H$G$O!"$=$l$rKd$a9~$`J8=q$N%U%)%s%H$N@_Dj$r0z$-7Q$.$^$9$,!"Be$o$j$K Courier (cmtt) $+ Roman (cmr) %U%)%s%H$N$$$:$l$+$K$9$k%*%W%7%g%s$,;H$($^$9!#$=$N:]$O%U%)%s%H%5%$%:$b;XDj$G$-$^$9!#$"$J$?$N DVI %I%i%$%P$,G$0U$N%5%$%:$N%U%)%s%H$r:n$j=P$9$3$H$,$G$-$J$$>l9g(Nc$($P dvips)!"I8=`E*$J 10, 11, 12 %]%$%s%H%5%$%:$G$J$s$H$+$7$N$$$G$/$@$5$$!#

METAFONT %f!<%6$X$N7Y9p: METAFONT $OL/$J%5%$%:$O9%$_$^$;$s!#

LaTeX $K4X$9$kA4$F$N%I%i%$%P$OJ8;zNs$NG[CV$N@)8f$KFCJL$JJ}K!$rDs6!$7$^$9: '{' $G;O$^$kJ8;zNs$O!"'}' $GJD$8$kI,MW$,$"$j$^$9$,!"$=$NJ8;zNsA4BN$,?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0$5$l$^$9!#'[' $G;O$^$kJ8;zNs$N>l9g$O!"0LCV$N;XDj$r$9$kJ8;zNs(t,b,l,r $N$&$A2 $D$^$G) $,B3$-!"<!$K']{'!"J8;zNsK\BN!"$G:G8e$K '}' $H$7$^$9$,!"$3$NJ8;zNs$O LaTeX $, LR-box $H$7$F@07A$7$^$9!#'\rule{}{}' $r;H$($P$5$i$KNI$$0LCV9g$o$;$,2DG=$G$7$g$&!#

?t$"$kCf$G!"E@ (point) $O!"LaTeX $N%3%^%s%I "\Diamond" $H "\Box" $r;H$C$FIA$+$l$^$9!#$3$l$i$N%3%^%s%I$O8=:_$O LaTeX2e $N%3%"$K$OB8:_$;$:!"latexsym %Q%C%1!<%8$K4^$^$l$F$$$^$9$,!"$3$N%Q%C%1!<%84pK\G[I[$N0lIt$G$"$j!"$h$C$FB?$/$N LaTeX $N%7%9%F%`$N0lIt$K$J$C$F$$$^$9!#$3$N%Q%C%1!<%8$r;H$&$3$H$rK:$l$J$$$G$/$@$5$$!#B>$NE@<o$O!"amssymb %Q%C%1!<%8$N5-9f$r;HMQ$7$^$9!#

%G%U%)%k%H$NIA2h%5%$%:$O 5 inch !_3 inch $G$9$,!"%*%W%7%g%s **size** $G$3$l$r%f!<%6$N4uK>$9$k$b$N$KJQ99$G$-$^$9!#$^$?!"%G%U%)%k%H$G$O X $H Y $N%5%$%:$NC10L$O inch $G$9$,!"B>$NC10L$r;H$&$3$H$b2DG=$G$9(8=:_$O cm $N$_)!#

'rotate' $r;XDj$9$k$H!"J8;zNs$N2sE>!"FC$K y <4$N%i%Y%k$N2sE>$,2DG=$K$J$j$^$9 (graphics $+ graphicx %Q%C%1!<%8$,I,MW)!#$=$N>l9g!"y <4%i%Y%k$r' @Q$_>e$27?' $K$9$k;EAH$_$ODd;_$5$l$^$9!#

Nc: 8+=P$7$N0LCV9g$o$;$K4X$7$F: gnuplot $N%G%U%)%k%H(BgDq$=$l$J$j$K$J$k$,!"$=$&$G$J$$$3$H$b$"$k):

```
      set title '\LaTeX\ -- $ \gamma $'
```

?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0:

```
      set label '{\LaTeX\ -- $ \gamma $}' at 0,0
```

0LCV$rL@<(E*$K;XDj(>e$K9g$o$;$k):

```
      set xlabel '[t]{\LaTeX\ -- $ \gamma $}'
```

B>$N8+=P$7 – L\@9$j$ND9$$8+=P$7$KBP$9$k8+@Q$j:

```
      set ylabel '[r]{\LaTeX\ -- $ \gamma $\rule{7mm}{0pt}}'
```

## Linux

**linux** %I%i%$%P$K$O;XDj$9$k%*%W%7%g%s$O2?$b$"$j$^$;$s!#$=$l$O%G%U%)%k%H$N%b!<%IMQ$K4D6-JQ?t GSVGAMODE $r;2>H$7$^$9!#$b$7$=$l$,@_Dj$5$l$F$$$J$1$l$P 1024x768x256 $r%G%U%)%k%H$H$7$F;HMQ$7$^$9$,!"$=$l$,$G$-$J$1$l$P 640x480x16 (I8=`$N VGA) $H$7$^$9!#

## Lua

$3$N **lua** =PNO%I%i%$%P$O!"BP>]@h;XDjIA2h%U%!%$%k$r:n@.$9$k$?$a$N!"30It Lua %9%/%j%W%H$H$NAH$_9g$o$;$G5!G=$7$^$9!#8=:_%5%]!<%H$7$F$$$kBP>]$O!"TikZ -> pdflatex $N$_$G$9!#

Lua $K4X$9$k>pJs$O!"http://www.lua.org $G;2>H$G$-$^$9!#

=q<0:

```
  set terminal lua <target name> | "<file name>"
                       {<script_args> ...}
                       {help}
```

%9%/%j%W%HMQ$K 'target name'!"$^$?$O0zMQIdIU$-$N 'file name' $,I,?\$G$9!#%9%/%j%W%H$N 'target name' $r M?$($?>l9g$O!"$3$N=PNO7A<0$O!""'gnuplot-<target name>.lua" $r$^$:%m!<%+%k%G%#%l%/%H%j$GC5$7!"$=$l$K <:GT$9$k$H4D6-JQ?t GNUPLOT_LUA_DIR $rC5$7$^$9!#

$=$NB>$N$9$Y$F$N0z?t$O!"A*Br$7$?%9%/%j%W%H$KI>2A$5$;$k$h$&$KM?$($i$l$^$9!#Nc$($P!"'set term lua tikz help' $O!"%9%/%j%W%H$=$l<+?H$K!"%9%/%j%W%HMQ$N%*%W%7%g%s$HA*Br$K4X$9$kDI2C$N%X%k%W$rI=<($5$;$^$9!#

## Lua tikz

TikZ %I%i%$%P$O!"HFMQ Lua =PNO7A<0$N=PNO%b!<%I$N0l$D$G$9!#

=q<0:

```
   set terminal lua tikz
    {latex | tex | context}
    {color | monochrome}
    {dashed | solid}
    {nooriginreset | originreset}
    {nogparrows | gparrows}
    {nogppoints | gppoints}
    {picenvironment | nopicenvironment}
    {noclip | clip}
    {notightboundingbox | tightboundingbox}
    {background "<colorpec>"}
    {size <x>{unit},<y>{unit}}
    {scale <x>,<y>}
    {plotsize <x>{unit},<y>{unit}}
    {charsize <x>{unit},<y>{unit}}
    {font "<fontdesc>"}
    {{fontscale | textscale} <scale>}
    {nofulldoc | nostandalone | fulldoc | standalone}
    {{preamble | header} "<preamble_string>"}
    {tikzplot <ltn>,...}
    {notikzarrows | tikzarrows}
    {rgbimages | cmykimages}
    {noexternalimages|externalimages}
    {bitmap | nobitmap}
    {providevars <var name>,...}
    {createstyle}
    {help}
```

0z?t$H$7$FD9$5$rI,MW$H$9$k%*%W%7%g%s$K$D$$$F$O!"C10L$,;XDj$5$l$F$$$J$1$l$P$=$N%G%U%)%k%H$O 'cm' $H$J$j$^$9!#$9$Y$F$ND9$5$K$O!"0J2<$NC10L$r;HMQ$G$-$^$9: 'cm', 'mm', 'in' $^$?$O 'inch', 'pt', 'pc', 'bp', 'dd','cc' (LuCm in $O%$%s%A (1in=2.54cm), pt $O%]%$%s%H (72.27pt=1in), pc $O%Q%$%+ (1pc=12pt), bp $O%S%C%0%]%$%s%H (72bp=1in), dd $O Didot %]%$%s%H (26.6dd=1cm), cc $O Cicero (1cc=12dd))!#?tCM$HC10L$N4V$K6uGr$rF~$l$F$O$$$1$^$;$s!#

'monochrome' $O!"@~$N?'IU$1$rL58z$K$7!"EI$jDY$7$r3%?'3,D4$K@Z$jBX$($^$9!#

'solid' $O!"<B@~$N$_$r;HMQ$7$^$9!#

'originreset' $O!"TikZ 2h$N86E@$r!"IA2h$N:82<3Q$X0\F0$7$^$9!#$3$l$O$$$/$D$+$NIA2h$r0l$D$N tikzpicture 4D6-Fb$K@0Ns$9$k$N$K;HMQ$G$-$^$9!#$3$l$O!"multiplot!"pm3d IA2h$G$O==J,$K$O%F%9%H$5$l$F$$$^$;$s!#

'gparrows' $O!"TikZ $,Ds6!$9$kLp (arrow) $NBe$o$j$K!"gnuplot FbIt$NLp (arrow) $NIA2h4X?t$r;HMQ$7$^$9!#

'gppoints' $O!"TikZ $,Ds6!$9$kIA2h5-9f$NBe$o$j$K!"gnuplot FbIt$N5-9fIA2h4X?t$r;HMQ$7$^$9!#

'nopicenvironment' $O!"'tikzpicture' 4D6-$N@k8@$r<jF0$G9T$&$h$&$K$9$k$?$a$K$=$l$r>JN,$7$^$9!#$3$l$K$h$j!"IA2h$NA08e$K!"$"$k PGF/TikZ %3!<%I$rD>@\F~$l$k$3$H$,$G$-$^$9!#

'clip' $O!"IA2h$rDj5A$5$l$?%-%c%s%P%9%5%$%:$G%/%j%C%T%s%0$7$^$9!#%G%U%)%k%H$O 'noclip' $G!"$3$l$O%-%c%s%P%9%5%$%:$r4^$`:G>.$N6k7A3(OH$N$_$r@_Dj$7$^$9!#%*%W%7%g%s 'plotsize' $+ 'tightboundingbox' $r;HMQ$7$?>l9g$O6k7A3(OH$b%/%j%C%T%s%0$NH"$b$$$:$l$b@_Dj$7$^$;$s!#

'tightboundingbox' $r@_Dj$9$k$H!"%*%W%7%g%s 'clip' $OL5;k$5$l!":G=*E*$J6k7A3OOH$O tikz $,7W;;$9$k<+A3$J3OOH$K$J$j$^$9!#

'background' $O!"GX7J?'$r0z?t <colorspec> $G;XDj$7$?CM$K@_Dj$7$^$9!#<colorspec> $OM-8z$J?'L>$+!"'#' $N8e$K 16 ?J?t$rCV$/3 %P%$%H$N RGB %3!<%I (Nc$($P '#ff0000' $O??@V) $N$$$:$l$+$G$J$1$l$P$$$1$^$;$s!#>JN,$7$?>l9g$OGX7J$OF)L@$K$J$j$^$9!#

%*%W%7%g%s 'size' $O!"%-%c%s%P%9%5%$%:$N 2 $D$ND9$5 <x>, <y> $rI,MW$H$7$^$9!#%G%U%)%k%H$N%-%c%s%P%9%5%$%:$O 12.5cm x 8.75cm $G$9!#

%*%W%7%g%s 'scale' $O!"%*%W%7%g%s 'size' $HF1Ey$N5!G=$G$9$,!"$3$N <x>, <y> $OD9$5$G$O$J$/!"3HBgN($K$J$j$^$9!#

%*%W%7%g%s 'plotsize' $O!"%-%c%s%P%9%5%$%:$NBe$o$j$KIA2hNN0h$N%5%$%:$N@_Dj$r9T$$$^$9$,!"$=$l$,DL>o$N gnuplot $N5sF0$G$9!#$3$N%*%W%7%g%s$r;HMQ$9$k$H!"$o$:$+$KHsBP>N$J9o$_I}$r:n$k$+$b$7$l$^$;$s!#'originreset' $N$h$&$K!"$3$N%*%W%7%g%s$r multiplot $d pm3d IA2h$G;HMQ$9$k$H!"I|ET9g$J7k2L$r>7$/62$l$,$"$j$^$9!#$=$l$KBe$o$kJ}K!$H$7$F!"$9$Y$F$N margin $r 0 $H@_Dj$7$?>e$G%*%W%7%g%s 'noclip' $r;HMQ$9$k!"$H$$$&<j$b$"$j$^$9!#$3$N>l9g$O!"IA2hNN0h$OM?$($?%-%c%s%P%9%5%$%:$NBg$-$5$K$J$j$^$9!#

%*%W%7%g%s 'charsize' $O!";HMQ$9$k%U%)%s%H$N?eJ?%5%$%:$H?bD>%5%$%:$NJ?6QCM$rI,MW$H$7$^$9!#$"$J$?$N TeX J8=q$Fb$G$3$l$r$I$N$h$&$K;HMQ$9$k$+$K$D$$$F$O!"%5%s%W%k$H$7$F@8@.$5$l$k%9%?%$%k%U%!%$%k$r8+$F$/$@$5$$!#

%*%W%7%g%s 'fontscale', 'textscale' $K$O!"=L<\Hf%Q%i%a!<%?$,I,MW$G$9!#%0%i%UFb$N$9$Y$F$NJ8;zNs$,$=$N=L<\Hf$G?-=L$5$l$^$9!#

%*%W%7%g%s 'tex', 'latex', 'context' $O!"TeX =PNO7A<0$NA*Br$G$9!#%G%U%)%k%H$O LaTeX $G$9!#$=$N%9%?%$%k%U%!%$%k$rFI$_9~$`$K$O!"$"$J$?$NJ8=q%U%!%$%k$N@hF,$KBP1~$9$k9T$rF~$l$F$/$@$5$$:

```
\input gnuplot-lua-tikz.tex    % (plain TeX $N>l9g)
\usepackage{gnuplot-lua-tikz}  % (LaTeX $N>l9g)
\usemodule[gnuplot-lua-tikz]   % (ConTeXt $N>l9g)
```

'createstyle' $O!"$=$N%9%/%j%W%H$+$i TeX/LaTeX/ConTeXt %9%?%$%k%U%!%$%k$rF3$-=P$7!"$=$l$i$rE,@Z$J%U%!%$%k$K=q$-=P$7$^$9!#

'fulldoc' $^$?$O 'standalone' $O!"$=$N$^$^%3%s%Q%$%k$G$-$k$h$&$J40A4$J LaTeX J8=q$r@8@.$7$^$9!#

'preamble' $^$?$O 'header' $O!"standalone %b!<%I$N%I%-%e%a%s%H$N%W%j%"%s%V%k$KDI2C LaTeX %3!<%I$r=PNO$9$k$N$K;H$$$^$9!#

%*%W%7%g%s 'tikzplot' $G$O!"%3%^%s%I '\path' $NBe$o$j$K '\path plot' $r;HMQ$7$^$9!#$=$l$KB3$/@~<o(linetype) $N?tCM$N%j%9%H (<ltn>,...) $O$=$l$K1F6A$5$l$kIA2h@~$rDj5A$7$^$9!#$9$Y$F$N@~<o$KBP$7!"0l$D$NIA2h%9%?%$%k$,B8:_$7$^$9!#1 0J>e$N$9$Y$F$N@~<o$KBP$7$F!"%G%U%)%k%H$NIA2h%9%?%$%k$O 'smooth' $G$9!#

%*%W%7%g%s 'tikzarrows' $r;HMQ$9$k$H!"%f!<%6$ND j5A$7$? gnuplot $NLp(arrow) $N%9%?%$%k$r TikZ $NLp$N%9%?%$%k$K3d$jEv$F$^$9!#$3$l$O!"Lp$NDj5A$N3Q$NCM$r ' 8m$C$F;HMQ$9$k' $3$H$G$J$5$l$F$$$^$9!#Nc$($P!"3Q '7' $K$h$kLp$N%9%?%$%k$O TikZ %9%?%$%k 'gp arrow 7' $K3d$jEv$F$i$l!"B>$KM?$($i$l$?CM$O$9$Y$FL5;k$5$l$^$9!#%G%U%)%k%H$G$O!"TikZ =PNO7A<0$O$9$Y$F$NLp$KBP$7$F%9%F%k%97A$NLp@h$r;HMQ$7$^$9!#%G%U%)%k%H$N gnuplot $N$h$&$K$9$k$K$O!"%*%W%7%g%s 'gparrows' $r;HMQ$7$F$/$@$5$$!#

'cmykimages' $G$O!"%$%s%i%$%s2hA|%G!<%?$KBP$7$F RGB %+%i!<%b%G%k$NBe$o$j$K CMYK %b%G%k$r;HMQ$7$^$9$,!"B>$N$9$Y$F$N?'(@~$N?'$J$I) $O!"$=$l$i$,!"Nc$($P xcolors %Q%C%1!<%8$G=hM}$5$l$k$N$G!"$3$N%*%W%7%g%s$N1F6A$r<u$1$^$;$s!#$3$N%*%W%7%g%s$O!"2hA|$,%$%s%i%$%s2hA|$G$J$/30It%G!<%?$G$"$k>l9g$OL5;k$5$l$^$9!#

%*%W%7%g%s 'externalimages' $r;HMQ$9$k$H!"$9$Y$F$N%S%C%H%^%C%W2hA|$r30It$N PNG 2hA|$H$7$F=q$-=P$7!"$=$l$i$,J8=q$N%3%s%Q%$%k;~$KFI$_9~$^$l$k$h$&$K$J$j$^$9!#DVI %U%!%$%k!"$*$h$S$=$N8e$N PostScript %U%!%$%k $r@8@.$9$k$K$O!"PNG %U%!%$%k$r EPS %U%!%$%k$K!"UL$KJQ49$9$kI,MW$,$"$j$^$9!#$3$l$ONc$($P ImageMagick $N **convert** $G9T$($^$9!#F)L@2=%S%C%H%^%C%W2hA|$O>o$K30It PNG 2hA|$H$7$F@8@.$7$^$9!#

%*%W%7%g%s 'nobitmap' $O!"%M%$%F%#%V$N PS, PDF %$%s%i%$%s2hA|7A<0$NBe$o$j$K!"2hA|$rE I$jDY$5$l$?D9J}7A$H$7$F%l%s%@%j%s%0$7$^$9!#$3$N%*%W%7%g%s$O!"2hA|$,%$%s%i%$%s2hA|$G$J$/30It%G!<%?$G$"$k>l9g$OL5;k$5$l$^$9!#

%*%W%7%g%s 'providevars' $O!"gnuplot $NFbItJQ?t!"%f!<%6JQ?t$r!"TeX %9%/%j%W%HFb$G$b%3%^%s%I '\gpgetvar{<var name>}' $r;HMQ$9$k$3$H$GMxMQ2DG=$K$5$;$^$9!#MxMQ$G$-$kJQ?t$N0lMw$r8+$k$K$O!"'show variables all' %3%^%s%I$r;HMQ$7$F$/$@$5$$!#

J8;zNs <fontdesc> $K$O!"Nc$($P '\small' $N$h$&$J TeX/LaTeX/ConTeXt $GM-8z$J%U%)%s%H%3%^%s%I$rF~$l$k$3$H$b$G$-!"$=$l$O!""font=<fontdesc>" $N7A<0$N%N!<%I%Q%i%a!<%?$H$7$FD>@\EO$5$l$^$9!#$3$l$O!"$"$k%N!<%I$K%3!<%I$rDI2C$9$k$N$K V$o$6$H4V0c$($F!W;H$($^$9!#Nc$($P '\small,yshift=1ex' $bM-8z$G$9$,!",yshift=1ex' $bM-8z$G!"$3$A$i$O8=:_$N%U%)%s%H@_Dj$rJQ99$7$^$;$s!#$7$+$7%j%9%H$NBh 2 0z?t$ONc30$G$9!#$=$l$,< ?tCM>{ C10L} $N7A<0$N?tCM$N>19g!"$=$l$OB>$N=PNO7A<0$G$=$&$G$"$k$h$&$K%U%)%s%H%5%$%:$H2r<a$5$l!"Bh 1 0z?t$KDI2C$5$l$F$7$^$$$^$9!#C10L$,>JN,$5$l$?CM$O 'pt' C10L$H2r<a$5$l$^$9!#Nc$($P!"'\sffamily,12,fill=red' $O!"GX7J?'$,@V$G 12pt $N LaTeX sans serif %U%)%s%H$r@_Dj$7$^$9!#F1$8$3$H$, ConTeXt $K$b8@$($^$9!#Nc$($P!"'\switchtobodyfont[iwona],10' $O%U%)%s%H$r 10pt %5%$%:$N Iwona $KJQ99$7$^$9!#Plain TeX %f!<%6$O!"%U%)%s%H%5%$%:$NJQ99$O:G=i$N0z?t$GL@<(E*$K9T$o$J$1$l$P$$$1$^$;$s!#%F%-%9%H%\%C%/%9$N=L<\$r@5$7$/<hF@$9$k$h$&!"2 $DL\$bF1$8CM$K@_Dj$9$Y$-$G$9!#

J8;zNs$OC10l!"$"$k$$$OF s=E0zMQI dFb$KF~$l$kI,MW$,$"$j$^$9!#F s=E0zMQI d$G$/$/$i$l$?J8;zNs$K$O!"2~9T$N '\n' $J$I$NFCJL$JJ8;z$rF~$l$k$3$H$,$G$-$^$9!#

## Mf

**mf** %I%i%$%P$O METAFONT %W%m%0%i%`$X$NF~NO%U%!%$%k$r:n$j$^$9!#$h$C$F$=$N?^$O TeX $NJ8=qC f$G$OJ8;z$HF1$8$h$&$K;H$&$3$H$,$G$-$^$9!#

J8=qC f$G?^$r;H$&$K$O!"gnuplot $N=PNO$9$k%U%!%$%k$rF~NO$H$7$F METAFONT %W%m%0%i%`$r<B9T$9$kI,MW$,$"$j$^$9!#$h$C$F!"%f!<%6$O%U%)%s%H$,:n$i$l$k%W%m%;%9$H?7$7$/:n$C$?%U%)%s%H$r%I%-%e%a%s%H$K<h$j9~$`$?$a$N4pACCN<1$,I,MW$H$J$j$^$9!#$7$+$7!";HMQ$9$k%5%$%H$G METAFONT %W%m%0%i%`$,E,@Z$K@_Dj$5$l$F$$$l$P!"7P83$N$J$$%f!<%6$G$b$=$&LdBj$J$/A`:n$O$G$-$k$G$7$g$&!#

%0%i%UCf$NJ8;z$O METAFONT $NJ8;z%;%C%H$K4p$E$$$F%5%]!<%H$5$l$^$9!#8=>u$G$O Computer Modern Roman %U%)%s%H%;%C%H$,F~NO$G$9$,!"%f!<%6$OI,MW$J%U%)%s%H$r2 ?$G$b<+M3$KA*$V$3$H$,$G$-$^$9!#$?$@$7$=$NA*$s$@%U%)%s%H$N METAFONT %=!<%9%U%!%$%k$,;H$($k>uBV$K$J$C$F$$$kI,MW$,$"$j$^$9!#8D!9$NJ8;z$O METAFONT $NCf$GJL!9$N%T%/%A%c!<JQ?t$KJ]B8$5$l!"U8;z$,I,MW$K$J$C$?$H$-$K$3$l$i$NJQ?t$,A`:n(2sE>!"?-=LEy) $5$l$^$9!#7gE@$O!"METAFONT %W%m%0%i%`$,2r<a$KMW$9$k;~4V$G$9!#$"$k7W;;5!($D$^$j PC) $G$O!"%T%/%A%c!<JQ?t$r$?$/$5$s;HMQ$7$9$.$k$3$H$G!";H$($k%a%b%j$NNL$N8B3&$,LdBj$r5/$3$9$3$H$b$"$j$^$9!#

**mf** %I%i%$%P$K$O%*%W%7%g%s$O$"$j$^$;$s!#

## METAFONT $N;H$$J}

- =PNO7A<0 (terminal) $r METAFONT $K%;%C%H:

```
set terminal mf
```

- =PNO%U%!%$%kL>$r@_Dj!#Nc$($P:

```
set output "myfigures.mf"
```

- %0%i%U$NI A2h!#3F%0%i%U$OJL!9$NJ8;z$r@8@.$7!"$=$N%G%U%)%k%H$NBg$-$5$O 5x3 %$%s%A$G$9$,!"$3$NBg$-$5$O **set size 0.5,0.5** $N$h$&$K$7$F$I$s$J%5%$%:$K$G$b<+M3$KJQ99$G$-$^$9!#
- **gnuplot** $r=*N;
- **gnuplot** $N=PNO%U%!%$%k$KBP$7$F METAFONT $r<B9T$7!"TFM %U%!%$%k$H GF %U%!%$%k$r:n$j$^$9!#%0%i%U$O3d$HBg$-$$ (5x3 %$%s%A) $N$G!"memmax $NCM$,>/$J$/$H$b 150000 $G$"$k METAFONT $r;H$&I,MW$,$"$k$G$7$g$&!#Unix $G$O!"$=$l$ODL>o bigmf $H$$$&L>A0$G%$%s%9%H!<%k$5$l$F$$$k$G$7$g$&!#0J2<$G$O!"virmf %3%^%s%I$, big HG$N METAFONT $G$"$k$H2>Dj$7!"<B9TNc$r<($7$^$9:
- METAFONT $NN)$A>e$2:

```
   virmf '&plain'
```

- =PNOAuCV$NA*Br: METAFONT %W%m%s%W%H ('*') >e$G<!$N$h$&$KBG$A$^$9:

```
   \mode:=CanonCX;      % $"$J$?$N;HMQ$9$k%W%j%s%?$r;XDj
```

- 3HBgN( (magnification) $NA*Br (%*%W%7%g%s):

```
   mag:=1;              % $"$J$?$N9%$_$NCM$r;XDj
```

- **gnuplot** $G:n$C$?%U%!%$%k$rF~NO:

```
   input myfigures.mf
```

E57ÆE*$JUnix %^%7%s$G$O!"virmf '&plain' $r<B9T$9$k%9%/%j%W%H"mf" $,$"$k$N$G!"virmf &plain $NBe$o$j$Kmf $r;H$($^$9!#$3$l$K$h$jmfput.tfm $Hmfput.$$$gf ($$$ $O=PNOAuCV$N2rA|EY) $N2 $D$N%U%!%$%k$,:n$i$l$^$9!# >e$N:n6H$O!"$9$Y$F$r%3%^%s%I%i%$%s>e$G4JC1$K<B9T$9$k$3$H$b$G$-$^$9: virmf '&plain' '\mode:=CanonCX; mag:=1; input myfigures.mf' $3$N>l9g!":n$i$l$k%U%!%$%kL>$O myfigures.tfm $H myfigures.300gf $H$$$&L>A0 $K$J$j$^$9!#

- gftopk $r;H$C$F GF %U%!%$%k$+$i PK %U%!%$%k$r@8@.:

```
 gftopk myfigures.300gf myfigures.300pk
```

gftopk $,:n$k%U%!%$%k$NL>A0$O$"$J$?$,;HMQ$9$k DVI %I%i%$%P$K0MB8$7$^$9$N$G!"%5%$%H$N TeX $N4IM}<T$K%U%)%s%HL>$N5,B'$K$D$$$FJ9$$$F$/$@$5$$!#<!$K TFM %U%!%$%k$H PK %U%!%$%k$rE,Ev$J%G%#%l%/%H%j$K%$%s%9%H!<%k$9$k$+$^$?$O4D6-JQ?t$rE,@Z$JCM$K@_Dj$7$^$9!#DL>o$=$l$O!"TEXFONTS $K%+%l%s%H%G%#%l%/%H%j$r4^$a$k$3$H$H!"$"$J$?$,;HMQ$9$k DVI %I%i%$%P$,;HMQ$7$F$$$k4D6-JQ?t (I8= `E*$JL>A0$O$"$j$^$;$s$, ...) $KBP$7$FF1$8$3$H$r$d$l$P:Q$_$^$9!#$3$l$O TeX $,%U%)%s%H%a%H%j%C%/ (TFM) %U%!%$%k $r8+$D$1!"DVI %I%i%$%P$, PK %U%!%$%k$r8+$D$1$i$l$k$h$&$K$9$k$?$a$KI,MW$J:n6H$G$9!#

- J8=q$K$=$N%0%i%U$rF~$l$k$?$a$K TeX $K$=$N%U%)%s%HL>$r;X<(:

```
 \font\gnufigs=myfigures
```

3F%0%i%U$O!":G=i$N%0%i%U$,J8;z 0!"2 HVL\$N%0%i%U$,J8;z 1 $H$$$&$h$&$K!"$=$l$>$l0l$D$NJ8;z$H$7$FJ]B8$5$l$F$$$^$9!#>e5-$N:n6H$r9T$J$&$H!"%0%i%U$O$=$NB>$NJ8;z$HF1$8$h$&$K;H$&$3$H$,$G$-!"Nc$($P%0%i%U1 $H2 $rJ8=q$Cf$K%;%s%?%j%s%0$7$FCV$/$?$a$K plain TeX %U%!%$%kCf$G$9$Y$-$3$H$O:

```
 \centerline{\gnufigs\char0}
 \centerline{\gnufigs\char1}
```

$@$1$G$9!#$b$A$m$s LaTeX $G$O picture 4D6-$r;H$C$F \makebox $H \put %^%/%m$GG$0U$N0LCV$K%0%i%U$rG[CV$9$k$3$H$,$G$-$^$9!#

$3$N$d$jJ}$O!"0lEY%U%)%s%H$r@8@.$7$F$7$^$($P!"BgI}$K;~4V$N@aLs$K$J$j$^$9: TeX $O%0%i%U$rJ8;z$H$7$F;H$$!"$=$l$rG[CV$9$k$K$O$4$/>/$J$$;~4V$7$+;HMQ$7$^$;$s$7!"%0%i%U$h$j$bJ8=q$NJ}$,=$@5$9$k$3$H$,B?$$$G$7$g$&$+$i!#$=$7$F$3$l$O TeX $N%a%b%j$N@aLs$K$b$J$j$^$9!#METAFONT %I%i%$%P$r;H$&$b$&:G8e$N0l$D$NMxE@$O!"@8@.$5$l$k DVI %U%!%$%k$,K\Mh$N%G%P%$%9H s0MB8$J7A$K$J$k$H$$$&$3$H$G$9!#$=$l$O eepic $d tpic %I%i%$%P$N$h$&$J \special %3%^%s%I$rA4$/;H$o$J$$$+$i$G$9!#

## Mif

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9!#**mif** %I%i%$%P$O Frame Maker MIF %U%)!<%^%C%H (version 3.00) $N=PNO$r@8@.$7$^$9!#$3$l$O 15*10 cm $N%5%$%:$N MIF %U%l!<%`$r=PNO$7!"F1$8%Z%s$G=q$+$l$k%0%i%U$N4pK\MWAG$O F1$8 MIF %0%k!<%W$K%0%k!<%W2=$5$l$^$9!#**gnuplot** $N1 %Z!<%8$K$*$1$k%0%i%U$N4pK\MWAG$O0l$D$N MIF %U%l!<%`$KIA2h$5$l!"$$$/$D$+$N MIF %U%l!<%`$O0l$D$NBg$-$J MIF %U%l!<%`Fb$K=8$a$i$l$^$9!#J8;zNs$G;H$o$l$k MIF %U%)%s%H$O "Times" $G$9!#

MIF 3.00 %I%i%$%P$G$O$$$/$D$+$N%*%W%7%g%s$,@_Dj$G$-$^$9!#

=q<0:

```
     set terminal mif {color | colour | monochrome} {polyline | vectors}
                      {help | ?}
```

**colour** $O@~<o (line type) >= 0 $N@~$r%+%i!<(MIF separation 2–7) $G!"**monochrome** $OA4$F$N@~$r9u (MIF separation 0) $GIA2h$7$^$9!#**polyline** $O6J@~$rO"B36J@~$H$7$FIA2h$7!"**vectors** $O6J@~$r%Y%/%H%k$N=8$^$j$H$7$FIA2h$7$^$9!#**help** $H **?** $O%*%s%i%$%s%X%k%W$rI8=`%(%i!<=PNO$KI=<($7$^$9!#N><T$O$=$N;HMQK!$NC;$$@bL@$r=PNO$7!"**help** $O9$K%*%W%7%g%s$bI=<($7$^$9!#

Nc:

```
     set term mif colour polylines    # %G%U%)%k%H
     set term mif                     # %G%U%)%k%H
     set term mif vectors
     set term mif help
```

## Mp

**mp** %I%i%$%P$O Metapost %W%m%0%i%`$XF~NO$9$k$3$H$r0U?^$7$?=PNO$r@8@.$7!"$=$N%U%!%$%k$KBP$7$F Metapost $r<B9T$9$k$H%0%i%U$r4^$` EPS %U%!%$%k$,:n$i$l$^$9!#%G%U%)%k%H$G$O Metapost $OA4$F$NJ8;zNs$r TeX $KDL$7$^$9!#$3$l$O%?%$%H%k$d8+=P$7$KG$0U$N TeX $N5-9f$rK\<AE*$K;H$&$3$H$,$G$-$k!"$H$$$&MxE@$r;}$D$3$H$r0UL#$7$^$9!#

=q<0:

```
  set term mp {color | colour | monochrome}
              {solid | dashed}
              {notex | tex | latex}
              {magnification <magsize>}
              {psnfss | psnfss-version7 | nopsnfss}
              {prologues <value>}
              {a4paper}
              {amstex}
              {"<fontname> {,<fontsize>}"}
```

%*%W%7%g%s **color** $O@~$r%+%i!<$G=q$/$3$H$r0UL#$7 ($=$l$r%5%]!<%H$9$k%W%j%s%?$d%G%#%9%W%l%$>e$G)!" **monochrome** ($^$?$O2?$b;XDj$7$J$$>l9g) $O9u$N@~$,A*Br$5$l$^$9!#%*%W%7%g%s **solid** $O@~$r<B@~$GIA$-!" **dashed** ($^$?$OL5;XDj) $O@~$r0[$J$k%Q%?!<%s$NE@@~$GIA$-J,$1$^$9!# **solid** $,;XDj$5$l$F$+$D **color** $,;XDj$5$l$J$+$C$?>l9g!"$[$H$s$IA4$F$N@~$,F1$8$b$N$K$J$j$^$9$,!"$3$l$b2?$+$N>l9g$K$OM-MQ$G$7$g$&$+$iG'$a$i$l$F$$$^$9!#

%*%W%7%g%s **notex** $O40A4$K TeX $r1*2s$7$^$9$N$G!"$3$N%*%W%7%g%s$N85$G$O8+=P$7$K$O TeX $N%3!<%I$O;H$&$3$H$,$G$-$^$;$s!#$3$l$O!"8E$$%0%i%U%U%!%$%k!"$"$k$$$O TeX $G$OFC<l5-9f$H$7$F2r<a$5$l$F$7$^$& **$** $d **%** $N$h$&$JJ0lHIE*$JJ8;z$r$?$/$5$s;H$&%U%!%$%k$N$?$a$KMQ0U$5$l$F$$$^$9!#

%*%W%7%g%s **tex** $O!"TeX $G=hM}$9$kJ8;zNs$r=PNO$9$k$h$&$K@_Dj$7$^$9!#

%*%W%7%g%s **latex** $O!"LaTeX $G=hM}$9$kJ8;zNs$r=PNO$9$k$h$&$K@_Dj$7$^$9!#$3$l$K$h$C$F TeX $G$O;H$($J$$$1$l$I LaTeX $G$O;H$($k$b$N!"Nc$($PJ,?t$r \frac $G=q$$$?$j$9$k$3$H$,$G$-$^$9!#$3$N%*%W%7%g%s$r;H$&>l9g$O!"4D6-JQ?t TEX $K LaTeX $N<B9T%W%m%0%i%`L>(DL>o$O latex) $r@_Dj$9$k$+!"$"$k$$$O **mpost –tex=<LaTeX** $N<B9T%W%m%0%i%`L>> **...** $H$9$k$3$H$rK:$l$J$$$G$/$@$5$$!#$=$&$G$J$$$H metapost $O%F%-%9%H$N=hM}$K TeX $r;H$*$&$H$7$F<:GT$7$F$7$^$&$G$7$g$&!#

TeX $K$*$1$k%U%)%s%H%5%$%:$NJQ99$O?t<0$K$O8z2L$,$J$/!"$=$N$h$&$JJQ99$r9T$J$&$H$F$b4JC1$JJ}K!$O!"Bg0hE*$K3HBgN((magnification factor) $r@_Dj$9$k0J30$K$O$"$j$^$;$s!#$=$l$,%*%W%7%g%s **magnification** $N0UL#$G$9!#$=$N>l9g$O3HBgN($r8e$m$K;XDj$9$kI,MW$,$"$j$^$9!#A4$F$NJ8;z((%0%i%U$G$O$J$/) $O$3$NN($G3HBg$5$l$^$9!#?t<0$r%G%U%)%k%H$N 10pt 0J30$NB>$N%5%$%:$G=q$-$?$$>l9g$O$3$l$r;HMQ$7$F$/$@$5$$!#$?$@;DG0$J$3$H$KA4$F$N?t<0$,F1$8%5%$%:$K$J$C$F$7$^$$$^$9$,!"$7$+$7!"0J2<$N MP =PNO$NJT=8$K4X$9$k@bL@$r;2>H$7$F$/$@$5$$!# **mag** $O **notex** $N85$G$bF/$-$^$9$,!"$=$l$r9T$J$&0UL#$,$J$$$/$i$$ (0J2<$K=R$Y$k) %U%)%s%H%5%$%:%*%W%7%g%s$O$&$^$/F/$-$^$9!#

%*%W%7%g%s **psnfss** $O postscript %U%)%s%H$r LaTeX $HAH$_9g$o$;$F;HMQ$7$^$9!#$3$N%*%W%7%g%s$O LaTeX $,;H$o$l$k>l9g$N$_0UL#$r;}$A$^$9$N$G!"<+F0E*$K **latex** %*%W%7%g%s$,A*Br$5$l$^$9!#$3$N%*%W%7%g%s$O0J2<$N LaTeX %Q%C%1!<%8$r;HMQ$7$^$9:inputenc(latin1), fontenc(T1), mathptmx, helvet(scaled=09.2), courier, latexsym, textcomp

%*%W%7%g%s **psnfss-version7** $b postscript %U%)%s%H$r LaTeX $HAH$_9g$o$;$F;HMQ$7$^$9 (**latex** $,<+F0E*$KA*Br$5$l$^$9) $,!"0J2<$N LaTeX %Q%C%1!<%8$r;HMQ$7$^$9:inputenc(latin1), fontenc(T1), times, mathptmx, helvet, courier

%*%W%7%g%s **nopsnfss** $O%G%U%)%k%H$G!"I8=`E*$J%U%)%s%H(2?$b;XDj$5$l$F$$$J$1$l$P cmr10) $,;H$o$l$^$9!#

%*%W%7%g%s **prologues** $OCD12C$NCM$r0z?t$K;}$A!"metapost %U%!%$%k$K **prologues:=<** $=$NCM**>** $H$$$&9T$rDI2C$7$^$9!#CM$H$7$F **2** $r;XDj$9$k$H metapost $O eps %U%!%$%k$r:n$k$h$&$K postscript %U%)%s%H$r;HMQ$7!"$=$l$K$h$j$=$N7k2L$ONc$($P ghostscript $J$I$G;2>H$G$-$k$h$&$K$J$j$^$9!#I8=`$G$O metapost $O TeX $N%U%)%s%H$r;HMQ$7$^$9$N$G!"$=$l$r;2>H$9$k$K$O(La)TeX $N%U%!%$%k$K<h$j9~$`I,MW$,$"$j$^$9!#

%*%W%7%g%s **noprologues** $O%G%U%)%k%H$G!"prologue $G;XDj$7$?$$+$J$k9T$bDI2C$5$l$^$;$s!#

%*%W%7%g%s **a4paper** $O **[a4paper]** $r documentclass $KDI2C$7$^$9!#I8=`$G$O letter MQ;f (%G%U%)%k%H) $,;H$o$l$^$9!#$3$N%*%W%7%g%s$O LaTeX $G$N$_;H$o$l$^$9$N$G!"<+F0E*$K **latex** %*%W%7%g%s$,A*Br$5$l$^$9!#

%*%W%7%g%s **amstex** $O!"<+F0E*$K **latex** %*%W%7%g%s$rA*Br$7!"0J2<$N LaTeX %Q%C%1!<%8$r;HMQ$7$^$9: amsfonts, amsmath(intlimits) !#%G%U%)%k%H$G$O$3$l$i$O;HMQ$5$l$^$;$s!#

0zMQId$G0O$^$l$?L>A0$O%U%)%s%HL>$rI=$7!"**set label** $d **set title** $GL@<(E*$K%U%)%s%H$,M?$($i$l$J$$>l9g$O $3$N%U%)%s%H$,;H$o$l$^$9!#%U%)%s%H$O TeX $,G'<1$G$-$k (TFM %U%!%$%k$,B8:_$9$k) $b$N$r;H$&I,MW$,$"$j$^$9!#%G%U%)%k%H$G$O **notex** $,A*Br$5$l$F$$$J$1$l$P "cmr10" $,!"$=$&$G$J$1$l$P "pcrr8r" (Courier) $,;H$o$l$^$9!#**notex** $N8 5$G$b!"Metapost $K$O TFM %U%!%$%k$OI,MW$G$9!#**pcrr8r.tfm** $O LaTeX psnfss %Q%C%1!<%8$N Courier %U%)%s%HL>$H$7$FM?$($i$l$F$$$^$9!#**notex** $N%G%U%)%k%H$+$i%U%)%s%H$rJQ99$9$9$k>l9g$O!">/$J$/$H$b 32-126 $N%3!<%IHO0O$O ASCII %(%s%3!<%G%#%s%0$K0lCW$9$k$b$N$rA*$s$G$/$@$5$$!#**cmtt10** $b$[$\;H$($^$9$,!"$7$+$7$3$l$O%3!<%I 32 (%9%Z!<%9) $K%9%Z!<%9$G$O$J$$J8;z$,F~$C$F$$$^$9!#

%5%$%:$O 5.0 $+$i 99.99 $N4V$NG$0U$N?t;z$r;XDj$G$-!">JN,$5$l$?>l9g$O 10.0 $,;H$o$l$^$9!#$J$k$Y$/**magstep** %5%$%:!"$D$^$j 1.2 $N@0?t$+$^$?$O 0.5 >h$N 10 G\$r>.?t0J2<2 7eL$K~$r4]$a$?CM$r;HMQ$9$k$3$H$r$*4+$a$7$^$9!#$=$l$O$=$l$, TeX $N%7%9%F%`$G:G$b$h$/;H$o$l$k%U%)%s%H$N%5%$%:$@$+$i$G$9!#

A4$F$N%*%W%7%g%s$O>JN,2DG=$G$9!#%U%)%s%H$r;XDj$9$k>l9g$O$=$l$O (I,MW$J$i%5%$%:$b$D$1$F) 0lHV:G8e$K;XDj$9$kI,MW$,$"$j$^$9!#%U%)%s%HL>$K$=$N%5%$%:>pJs$,4^$^$l$F$$$?$H$7$F$b!"%5%$%:$rJQ$($k$K$O%U%)%s%H%5%$%:$r;XDj$9$kI,MW$,$"$j$^$9!#Nc$($P **set term mp "cmtt12"** $O cmtt12 $r%G%U%)%k%H$N%5%$%:$G$"$k 10 $K=L$a$F;H$$$^$9!#$=$l$OB?J,K>$^$J$$$3$H$G$7$g$&$7 cmtt10 $r;H$&J}$,NI$$$G$7$g$&!#

0J2<$N ascii J8;z$O!"TeX $G$OFCJL$K0 7$o$l$^$9:

```
$, &, #, %, _;  |, <, >;  ^, ~,  \, {, }
```

$, #, &, _, % $N5 $D$O!"Nc$($P \\$ $H$9$k$3$H$GMF0W$K$=$l$r%(%9%1!<%W$G$-$^$9!#<, >, | $N3 $D$O!"Nc$($P $<$ $N$h$&$K?t<0%b!<%I$KF~$l$F$d$l$P$&$^$/$$$-$^$9!#;D$j$N$b$N$K4X$7$F$O>/$7 TeX $N2sHr:v$,I,MW$K$J$j$^$9$,!"E,Ev$J$h$$ TeX $NK\$,$=$l$r;XF3$7$F$/$l$k$G$7$g$&!#

8+=P$7$rF s=E0zMQId$G0O$`>l9g!"TeX %3!<%I$N%P%C%/%9%i%C%7%e$O%(%9%1!<%W$9$k (2 $D=q$/) I,MW$,$"$j$^$9!#C10 l0zMQId$r;H$($P$=$l$rHr$1$k$3$H$O$G$-$^$9$,!":#EY$O2~9T$H$7$F \\n $r;H$($J$/$J$j$^$9!#$3$l$r=q$$$F$$$k8=:_!"gnuplot 3.7 $O **plot** %3%^%s%I$GM?$($i$l$?%?%$%H%k$O!"JL$J>l=j$GM?$($i$l$?>l9g$H$O0[$J$k=hM}$r$7$^$9$7!"0zMQId$N%9%?%$%k$K$+$+$o$i$:TeX %3%^%s%I$N%P%C%/%9%i%C%7%e$OF s=E2=$7$?J}$,NI$5$=$&$G$9!#

Metapost $N2hA|$O TeX $NJ8=qFb$G0lHIL$K;H$o$l$F$$$^$9!#Metapost $O%U%)%s%H$r TeX $,9T$J$&$N$HA4$/F1$8J}K!$G0 7$$!"$=$l$OB>$NBgDq$NJ8=q@07A%W%m%0%i%`$H$O0[$J$C$F$$$^$9!#%0%i%U$, LaTeX $NJ8=q$K graphics %Q%C%1!<%8$G<h$j9~$^$l!"$"$k$$$O epsf.tex $r;H$C$F plainTeX $K<h$j9~$^$l!"$=$7$F dvips ($^$?$OB>$N dvi $+$i ps $X$NJQ49%=%U%H) $G PostScript $KJQ49$5$l$k>l9g!"$=$N%0%i%UFb$NJ8;z$OBgDq$O@5$7$/0 7$o$l$F$$$k$G$7$g$&!#$7$+$7!"Metapost =PNO$r$=$N$^$^ PostScript %$%s%?%W%j%?$KAw$C$F$b!"%0%i%UFb$NJ8;z$O=PNO$5$l$J$$$G$7$g$&!#

### **Metapost** $N;H$$J}

- $^$: terminal %I%i%$%P$r Metapost $K@_Dj!"Nc$($P:

```
set terminal mp mono "cmtt12" 12
```

- =PNO%U%!%$%k$rA*Br!"Nc$($P:

```
set output "figure.mp"
```

- %0%i%U$r:n@.!#3F plot ($^$?$O multiplot $N3F%0%k!<%W) $O$=$l$>$l JL$J Metapost beginfig...endfig %0%k!<%W$KJ,$1$i$l$^$9!#$=$N%G%U%)%k%H$N%5%$%:$O 5x3 %$%s%A$G$9$,!"$=$l$O **set size 0.5,0.5** $H$+!"$=$&$7$?$$$H;W$&E,Ev$J3d9g$r$=$N$h$&$K;XDj$9$k$3$H$GJQ99$G$-$^$9!#
- gnuplot $r=*N;!#
- gnuplot $N=PNO%U%!%$%k$KBP$7$F Metapost $r<B9T$7$F EPS %U%!%$%k$r:n@.:

```
mpost figure.mp  OR  mp figure.mp
```

Metapost %W%m%0%i%`L>$O%7%9%F%`$K0MB8$7!"Unix $G$ODL>o **mpost** $G!"B>$NB?$/$N%7%9%F%`$G$O **mp** $G$9!# Metapost $O3F%0%i%U$KBP$7$F 1 $D$:$D$N EPS %U%!%$%k$r@8@.$7$^$9!#

- $=$N%0%i%U$rJ8=q$K<h$j9~$`$K$O LaTeX graphics %Q%C%1!<%8$d!"plainTeX $G$O epsf.tex $r;HMQ:

```
\usepackage{graphics} % LaTeX
\input epsf.tex       % plainTeX
```

TeX DVI =PNO$r PS $KJQ4 9$ 9$k$N$K! "dvips 0J3 0$N DVI %I%i%$%P$r; H$&>19g$O! "LaTeX %U% !%$%k$K0J2<$N9T $rF~$1$kI,MW$,$"$k$+$bCN$1$^$;$s:

```
\DeclareGraphicsRule{*}{eps}{*}{}
```

:n$i$1$?3F%0%i%U$OJ,N%$7$?%U% !%$%k$K$J$C$F$$$F! ": G=i$N%0%i%U$N%U% !%$%k$O! "Nc$ ($P figure.0, 2 $DL\$ONc $ ($P figure.1 $N$h$&$JL>A0$K$J$j$^$9! #$h$C$F! "3 $DL\$N%0%i%U$rJ8=q$K<h$j9~$ `$?$a$K$"$J$?$,$7$J$1$1$P $$$1$J$$3$H$O0J2<$N$_$G$9:

```
\includegraphics{figure.2} % LaTeX
\epsfbox{figure.2}         % plainTeX
```

mp %I%i%$%P$N postscript %I%i%$%P$KBe$o$kMxE@$O! "$b$7$"$k$H$9$1$P! "$=$1$OJT=82DG=$J=PNO$G$"$k$H$$$& $3$H$G$7$g$&! #$3$N=PNO$r2DG=$J8B$je:No$K$9$k$?$a$N! "$+$J$j$NEXNO$,J'$o$1$^$7$?! #Metapost 8@81$K4X$9 $k$=$&$$C$?CN<1$N$*$+$2$G! "%G%U%)%k%H$N@~<o$d?'$OG [Ns **lt**[] $d **col**[] $rJT=8$9$k$3$H$GJQ9 9$G$-$k$h$&$K$J $j$^$7$?! #<B@~/E@@~! "%+%i! </Gr9u$H$$$C$?A*Br$b! "??5 6CM$H$7$FD j5A$5$1$F$$$k **dashedlines** $d **colorlines** $rJQ9 9$9$k$3$H$G9T$J$ ($^$9! #%G%U%)%k%H$N **tex** %*%W%7%g%s$,M-8z$J>19g! "%V%m%C%/ **vebatimtex...etex** $r JT=8$9$k$3$H$G! "%i%Y%kJ8; z%U%)%s%H$KBP$9$kBg0hE*$JJQ9 9$,9T$J$ ($^$9! #F C$K! "$b$7K>$ `$J$i LaTeX $N%W %j%"%s%V%k$rDI2C$9$k$3$H$b$G$-! "$=$N>19g LaTeX $N; }$D%5%$% :JQ9 9%3%^%s%I$r; H$ ($k$N$G: GBg$N=@Fp@-$r H/4x$G$-$k$G$7$g$&! #$?$@$7! "Metapost $K plainTeX $G$J$/LaTeX $r<B9T$5$;$k$h$&! "E,@Z$J MP @_DjJQ?t $r@_Dj$9$k$3$H$rK:$1$J$$$G$/$@$5$$! #

## Pbm

Cm0U: gnuplot $, –with-bitmap-terminals $G: n$i$1$?>19g$N$_; H$ ($^$9! #=q<0:

```
set terminal pbm {<fontsize>} {<mode>} {size <x>,<y>}
```

<fontsize> $O **small** $+ **medium** $+ **large** $G! "<mode> $O **monochrome** $+ **gray** $+ **color** $G$9! #%G%U%) %k%H$NI A2h%5%$% :$O 640 %T%/%;%k$NI }$G 480 %T%/%;%k$N9b$5$G$9! #=PNO%5%$% :$O! "x $H y $NN>J}$r 8 %T%/%; %kG\$7$?$b$N$K: G$b6a$/$J$k$h$&$K6uGr$,DI2C$5$1$^$9! #I,MW$G$"$1$P! "$3$N6uGrItJ,$O8e$G<h$j= |$/$3$H$, $G$-$^$9! #

**pbm** %I%i%$%P$N=PNO$O <mode> $K$h$j$^$9: **monochrome** $O portable bitmap (PBM; 1 %T%/%;%k 1 %S%C %H) $r! "**gray** $O portable graymap (PGM; 1 %T%/%;%k 3 bit) $r! "**color** $O portable pixmap (PPM; 1 %T%/%; %k 4 %S%C%H) $r=PNO$7$^$9! #

$3$N%I%i%$%P$N=PNO$O! "NETPBM $K$h$C$FDs6 !$5$1$kMM! 9$J2hA |JQ4 9! "2hA |=hM}%D! <%k$G; H$&$3$H$,$G$-$^ $9! # Jef Poskanzer $N PBMPLUS %Q%C%1! <%8$K4p$E$/ NETPBM $O! ">e5-$N PBM 7A<0$+$i GIF, TIFF, MacPaint, Macintosh PICT, PCX, X11 %S%C%H%^%C%W! "$=$NB>B?$/$N7A<0$KJQ4 9$9$k%W%m%0%i% `$rDs6 !$7$^$9! # 40A4$J>pJs$O http://netpbm.sourceforge.net/ $K$"$j$^$9! #

Nc:

```
set terminal pbm small monochrome                # %G%U%)%k%H
set terminal pbm color medium size 800,600
set output '| pnmrotate 45 | pnmtopng > tilted.png'  # NETPBM $rMxMQ
```

## Pdf

$3$N%I%i%$%P$O Adobe PDF (Portable Document Format) =PNO$r@8@.$7! "$=$1$O Acrobat Reader $N$h$&$J %D! <%k$GI=<(! "0u: ~$,$G$-$^$9! #[Hs?d>)] $3$N=PNO7A<0$O! "Portable Document Format 7A<0$N%U% !%$%k$r@8 @.$9$k$N$K! "%U% j! <$G$O$J$$%i%$%V%i%j PDFlib (GmbH Munchen) $r; HMQ$7$^$9! #$"$J$?$,! "PDFlib $N>&MQ %i%$%;%s%9$r; }$C$F$$$k$N$G$J$1$1$P! "$=$7$F$=$1$,Ds6 !$9$kFCJL$J5 !G=$rI,MW$H$9$k$N$G$J$1$1$P! "$3$1$N Be$o$j$K cairopdf =PNO7A<0$r; HMQ$9$kJ}$,$$$$$G$7$g$&! #gnuplot $G$O! "wxt $d qt $N$h$&$JBPOC7 ?=PNO7A<0 $G$N: n6HCf$K PDF %U% !%$%k$r@8@.$5$;$k$3$H$b$G$-$^$9! #

=q<0:

```
set terminal pdf {monochrome|color|colour}
                 {{no}enhanced}
                 {fname "<font>"} {fsize <fontsize>}
                 {font "<fontname>{,<fontsize>}"} {fontscale <scale>}
```

```
                         {linewidth <lw>} {rounded|butt}
                         {dl <dashlength>}
                         {size <XX>{unit},<YY>{unit}}
```

%G%U%)%k%H$G$O!"8D!9$N@~<o$KBP$7$F0[$J$k?'$rMQ$$$^$9!#**monochrome** $rA*Br$9$k$HA4$F$N@~<o$r9u$GIA$-$^$9$,!"%b%N%/%m%b!<%I$G$bEI$j$D$V$7NN0h$d%i%$%s%9%?%$%k$G$OL@<(E*$K?'$r;HMQ$9$k$3$H$,$G$-$^$9!#

<font> $O%G%U%)%k%H$G;H$o$l$k%U%)%s%HL>(%G%U%)%k%H$G$O Helvetica) $G<fontsize> $O%]%$%s%HC10L$G$N%U%)%s%H%5%$%:(%G%U%)%k%H$G$O 12) $G$9!#$I$N$h$&$J%U%)%s%H$,;H$($F!"?7$7$$%U%)%s%H$r%$%s%9%H!<%k$9$k$K$O!"$H$$$C$?$3$H$K4X$7$F$O!"%m!<%+%k$K%$%s%9%H!<%k$5$l$F$$$k pdflib $N%I%-%e%a%s%H$r;2>H$7$F$/$@$5$$!#

%*%W%7%g%s **enhanced** $O!"3HD%J8;zNs=hM}5!G=(2<IU$-J8;z!">eIU$-J8;z!"$*$h$SJ#?t$N%U%)%s%H$NMxMQ) $rM-8z$K$7$^$9!#0J2<;2>H: **enhanced (p. 27)**!#

IA2h$K$*$1$kA4$F$N@~$NI}$O **linewidth** $G;XDj$9$k0x;R <n> $GA}2C$9$k$3$H$,$G$-$^$9!#F1MM$K!"**dashlength** $O%G%U%)%k%H$NE@@~$N6uGrItJ,$KBP$9$k@Q0x;R$G$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7!"%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

PDF =PNO$N%G%U%)%k%H$N%5%$%:$O!"5inch x 3inch $G$9!#%*%W%7%g%s **size** $O!"$3$l$r%f!<%6$N;XDj$9$k$b$N$XJQ99$7$^$9!#%G%U%)%k%H$N X, Y %5%$%:$NC10L$O%$%s%A$G$9$,!"B>$NC10L$b;HMQ2DG=$G$9 (8=:_$O cm $N$_)!#

## Pdfcairo

=PNO7A<0 **pdfcairo** $O!"PDF =PNO$r@8@.$7$^$9!#<B:]$NIA2h$O!"2D %0%i%U%#%C%/%i%$%V%i%j$G$"$k cairo $H!"J8;zNs$NG[CV$H%l%s%@%j%s%0MQ$N%i%$%V%i%j pango $r7PM3$7$F9T$o$l$^$9!#

=q<0:

```
       set term pdfcairo
                    {{no}enhanced} {mono|color}
                    {font <font>} {fontscale <scale>}
                    {linewidth <lw>} {rounded|butt|square} {dashlength <dl>}
                    {background <rgbcolor>
                    {size <XX>{unit},<YY>{unit}}
```

$3$N=PNO7A<0$O!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $r%5%]!<%H$7$F$$$F!"%U%)%s%H$d=q<0%3%^%s%I (>eIU!"2<IU$J$I) $r%i%Y%k$dB>$NJ8;zNs$KKd$a9~$`$3$H$,$G$-$^$9!#3HD%J8;zNs=hM}%b!<%I$N=q<0$OB>$N gnuplot $N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **enhanced (p. 27)**!#

IA2h$K$*$1$kA4$F$N@~$NI}$O!"**linewidth** $G;XDj$9$k0x;R <lw> $GJQ99$G$-$^$9!#%G%U%)%k%H$N@~I}$O 0.5 %]%$%s%H$G$9!#(1 "PostScript" %]%$%s%H= 1/72 %$%s%A = 0.353 mm)

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7$^$9!#%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

PDF =PNO$N%G%U%)%k%H$N%5%$%:$O!"5inch x 3inch $G$9!#%*%W%7%g%s **size** $O!"$3$l$r%f!<%6$N;XDj$9$k$b$N$XJQ99$7$^$9!#%G%U%)%k%H$N X, Y %5%$%:$NC10L$O%$%s%A$G$9$,!"B>$NC10L$b;HMQ2DG=$G$9 (8=:_$O cm $N$_)!# **size** %*%W%7%g%s$G;XDj$5$l$?$3$H$K$h$kIA2h$NC<$+$iC<$^$G$NNN0h$O!">o$K%9%/%j!<%s:BI8$N 0.0 $+$i 1.0 $KBP1~$7$^$9!#

<font> $O!""FontFace,FontSize" $N=q<0!"$D$^$j%U%)%s%HL>$H%5%$%:$r%+%s%^$G6h@Z$C$?0l$D$NJ8;zNs$H$7$FI=5-$7$^$9!#FontFace $O!"'Arial' $N$h$&$JDL>o$N%U%)%s%HL>$G$9!#%U%)%s%HL>$rM?$($J$$>l9g!"pdfcairo =PNO7A<0$G$O'Sans' $,;HMQ$5$l$^$9!#FontSize $O%]%$%s%HC10L$G$N%U%)%s%H%5%$%:$G$9!#;XDj$7$J$$>l9g$O!"pdfcairo =PNO7A<0$G$O 12 %]%$%s%H%5%$%:$NI8=`%U%)%s%H$,;HMQ$5$l$^$9!#$7$+$7!"$3$N=PNO7A<0$N%Q%i%a!<%? fontscale $N%G%U%)%k%H$O 0.5 $J$N$G!"8+$+$1$N%U%)%s%H%5%$%:$O!"PDF =PNO$r%U%k%5%$%:$G8+$?>l9g$h$j$b>.$5$/$J$k$G$7$g$&!#

```
  Nc :
     set term pdfcairo font "Arial,12"
     set term pdfcairo font "Arial" # %U%)%s%HL>$N$_JQ99
     set term pdfcairo font ",12" # %U%)%s%H%5%$%:$N$_JQ99
     set term pdfcairo font "" # %U%)%s%HL>$H%5%$%:$r%j%;%C%H
```

%U%)%s%H$O!"DL>o$N%U%)%s%H=hM}5!9=$K$h$j<hF@$5$l$^$9!#Windows $G$O!"%U%)%s%H$O%3%s%H%m!<%k%Q%M%k$N"%U%)%s%H" $N9`L\$G9=@.$5$l8+$D$1$i$l$k$b$N$G!"UNIX $G$O!"%U%)%s%H$O "fontconfig" $G=hM}$5$l$^$9!#

J8;zNs$N%l%$%"%&%H$K;HMQ$5$l$k%i%$%V%i%j Pango $O!"utf-8 $K4p$E$$$F$$$^$9$N$G!"pdfcairo =PNO7A<0$G $O!"J8;z%3!<%I$r utf-8 $KJQ49$9$kI,MW$,$"$j$^$9!#%G%U%)%k%H$NF~NOJ8;z%3!<%I$O!"$"$J$?$,;HMQ$7$F$$$k ’locale’ $K4p$E$-$^$9!#B>$NJ8;z%3!<%I$K$7$?$$>l9g$O!"$"$J$?$,$I$NJ8;z%3!<%I$r;H$C$F$$$k$N$+$r3N<B$K gnuplot $,$o$+$k$h$&$K$7$F$/$@$5$$!#>\:Y$K$D$$$F$O!"0J2<;2>H: **encoding (p. 128)**!#

pango $O!"unicode %^%C%T%s%0$G$J$$%U%)%s%H$KBP$7$F$OM=4|$;$L7k2L$rM?$($k$+$b$7$l$^$;$s!#Nc$($P Symbol %U%)%s%H$KBP$7$F$O!"pdfcairo =PNO7A<0$O!"J8;z%3!<%I$r unicode $KJQ49$9$k$?$a$K http://www.unicode.org/ $GDs6!$5$l$k%^%C%T%s%0$rMxMQ$7$^$9!#$J$*!""the Symbol font" $O!"Acrobat Reader $H0l=o$K "SY______.PFB" $H$7$FG[I[$5$l$F$$$k Adobe Symbol %U%)%s%H$G$"$k$H2r<a$5$l$k$3$H$KCm0U$7$F$/$@$5$$!#$3$NBe$o$j$K!" OpenOffice.org $H0l=o$K "opens___.ttf" $H$7$FG[I[$5$l$k OpenSymbol %U%)%s%H$,F1$8J8;z$rDs6!$7$F$$$^$9!#Microsoft $b Symbol %U%)%s%H("symbol.ttf") $rG[I[$7$F$$$^$9$,!"$3$l$O0[$J$kJ8;z%;%C%H$K$J$C$F$$$F!"$$$/$D$+$O7g$1$F$$$^$9$7!"$$$/$D$+$O?t<05-9f$KJQ$o$C$F$7$^$C$F$$$^$9!#$"$J$?$N%G%U%)%k%H$N@_Dj$G$J$s$i$+$NLdBj$,5/$-$?>l9g(Nc$($P%G%b%9%/%j%W%H enhancedtext.dem $,$A$c$s$HI=<($5$l$J$$$H$$$C$?>l9g) $O!"Adobe $+ OpenOffice $N Symbol %U%)%s%H$r%$%s%9%H!<%k$7$F!"Microsoft $N Symbol %U%)%s%H$r:o=|$7$J$$$H$$$1$J$$$+$b$7$l$^$;$s!#"windings" $N$h$&$JB>$NHsI8=`$N%U%)%s%H$G$bF0:n$9$k$3$H$,Js9p$5$l$F$$$^$9!#

IA2h$N%l%s%@%j%s%0$O!":#$N$H$3$mJQ99$G$-$^$;$s!#=PNO$r$h$jNI$/$9$k$?$a$K$3$N%l%s%@%j%s%0$O!"%"%s%A%(%$%j%"%9!"%*!<%P!<%5%s%W%j%s%0$N2 $D$N5!9=$r;}$C$F$$$^$9!#%"%s%A%(%$%j%"%9$O!"?eJ?$d?bD>$G$J$$@~$r3j$i$+$KI=<($7$^$9!#%*!<%P!<%5%s%W%j%s%0$O!"%"%s%A%(%$%j%"%9$HAH$G%T%/%;%k$h$j$b>.$5$$%5%$%:$G$N@:EY$rDs6!$7!"gnuplot $,Hs@0?t:BI8$ND>@~$r=q$1$k$h$&$K$J$j$^$9!#$3$l$O!"BP3QJ}8~$ND>@~(Nc$($P ’plot x’) $,:81&$KMI$l$k$N$rHr$1$^$9!#

## Pm

**pm** %I%i%$%P$O!"%0%i%U$,IA2h$5$l$k OS/2 %W%l%<%s%F!<%7%g%s%^%M!<%8%c%&%#%s%I%&$rDs6!$7$^$9!#$=$N%&%#%s%I%&$O:G=i$N%0%i%U$,IA2h$5$l$?$H$-$K3+$+$l$^$9!#$3$N%&%#%s%I%&$O0u:~!"%/%j%C%W%\!<%I$X$N%3%T!<!"$$$/$D$+$N@~<o$d?'$ND4@0$N$?$a$N5!G=!"$=$7$F$=$l<+?H$N%*%s%i%$%s%X%k%W$r;}$C$F$$$^$9!#**multiplot** %*%W%7%g%s$b%5%]!<%H$5$l$F$$$^$9!#

=q<0:

```
set terminal pm {server {n}} {persist} {widelines} {enhanced} {"title"}
```

**persist** $r;XDj$9$k$H!"3F%0%i%U$O$=$l$>$l<+?H$N%&%#%s%I%&$r;}$A!"$=$N$9$Y$F$N%&%#%s%I%&$O **gnuplot** $,=*N;$7$?8e$b3+$$$?$^$^$K$J$j$^$9!#**server** $r;XDj$9$k$H!"A4$F$N%0%i%U$OF1$8%&%#%s%I%&Fb$K8=$o$l!"$=$l$O **gnuplot** =*N;8e$b3+$$$?$^$^$K$J$j$^$9!#$3$N%*%W%7%g%s$O!"$5$i$KD12C$N?t0z?t$r<h$j!"$=$N?t;z$O%5!<%P%W%m%;%9$N%$%s%9%?%s%9$K$J$j$^$9!#$h$C$FF1;~$KJ#?t$N%5!<%P%&%#%s%I%&$r;H$&$3$H$,$G$-$^$9!#

**widelines** $r;XDj$9$k$H!"A4$F$N%0%i%U$OI}$N9-$$@~$GIA$+$l$^$9!#**enhanced** $r;XDj$9$k$H!">eIU$-J8;z$d2<IU$-J8;z!"J#?t$N%U%)%s%H$r;H$&$3$H$,$G$-$^$9(>\:Y$O!"0J2<;2>H: **enhanced text (p. 27)**)!#%3%"PostScript %U%)%s%H$N%U%)%s%HL>$O 1 J8;z$K>JN,$G$-$^$9(T/H/C/S $O$=$l$>$l Times/Helvetica/Courier/Symbol $r 0UL#$7$^$9)!#

**title** $r;XDj$9$k$H!"$=$l$OIA2h%&%#%s%I%&$N%?%$%H%k$H$7$F;H$o$l$^$9!#$=$l$O%5!<%P%$%s%9%?%s%9L>$H$7$F$b;H$o$l!"$=$l$OD12C$N?t0z?t$r>e=q$-$7$^$9!#

@~$NI}$O **set linestyle** $GJQ99$G$-$^$9!#

## Png

=q<0:

```
set terminal png
       {{no}enhanced}
       {{no}transparent} {{no}interlace}
       {{no}truecolor} {rounded|butt}
       {linewidth <lw>} {dashlength <dl>}
       {tiny | small | medium | large | giant}
       {font "<face> {,<pointsize>}"} {fontscale <scale>}
       {size <x>,<y>} {{no}crop}
       {background <rgb_color>}
```

PNG, JPEG, GIF 2hA|$O! "3 0It%i%$%V%i%j libgd $r;H$C$F@8@.$5$l$^$9!#PNG $NI A2h$O! "ImageMagick %Q%C%1!<%8$N%=%U%H 'display' $K$=$N=PNO$r0J2<$N$h$&$K%Q%$%W$GEO$9$3$H$GBPOCE*$KI=<($5$;$k$3$H$,$G$-$^$9:

```
set term png
set output '| display png:-'
```

<!$NI A2h%3%^%s%I$+$i$N=PNO$O! "display %&%#%s%I%&>e$GBPOCE*$K <space> $rBG$D$3$H$G8+$k$3$H$,$G$-$^$9!#8=:_$NI A2h$r%U%!%$%k$KJ]B8$9$k$K$O! "display %&%#%s%I%&$G:8%/%j%C%/$7! "save $rA*Br$7$F$/$@$5$$!#

**transparent** $O! "%I%i%$%P$KGX7J?'$NF)L@2=(transparent) $r9T$&$h$&;X<($7$^$9!#%G%U%)%k%H$O **notransparent** $G$9!#

**interlace** $O! "%I%i%$%P$K%$%s%?!<%l!<%9 GIF $r@8@.$9$k$h$&;X<($7$^$9!#%G%U%)%k%H$O **nointerlace** $G$9!#

%*%W%7%g%s **linewidth** $H **dashlength** $O3HBgN($G! "I A2h$5$l$k$9$Y$F$N@~$K1F6A$rM?$($^$9!#$9$J$o$A! "$3$l$i$OMM!9$JI A2h%3%^%s%I$GMW5a$5$l$kCM$K$+$1;;$5$l$^$9!#

%G%U%)%k%H$G$O! "=PNO$5$l$k PNG 2hA|$O 256 8D$KHV9fIU$1$i$l$??'$r;HMQ$7$^$9!#Be$o$j$K%*%W%7%g%s **truecolor** $r;H$($P! "24 %S%C%H/%T%/%;%k$N?'>pJs$r;}$D TrueColor 2hA|$,@8@.$5$l$^$9!#F)L@2=EI$j$D$V$7 (transparent fill) $r;HMQ$9$k$H$-$O! "$3$N%*%W%7%g%s **truecolor** $,I,MW$K$J$j$^$9!#0J2<;2>H: **fillstyle (p. 172)**!#GX7J$NF)L@2=$O! "HV9fIU$12hA|$+ TrueColor 2hA|$G2DG=$G$9!#

**butt** $O@~J,$NI A2h$G! "$=$NC<$NE@$G$N$O$_$@$7$r5/$3$5$J$$I A2h%a%=%C%I$r;H$&$h$&%I%i%$%P$K;X<($7$^$9!#$3$N@_Dj$O! "@~I}$, 1 $h$jBg$-$$>l9g$K$N$_M-8z$G$9!#$3$N@_Dj$O! "?eJ?@~! "?bD>@~$NI A2h$N>l9g$KM-MQ$G$7$g$&!#%G%U%)%k%H$O **rounded** (4]$a) $G$9!#

%U%)%s%H$NA*Br$N>\:Y$O! "$d$dJ#;($G$9!#0J2<$KF1$80UL#$r;}$D4JC1$JNc$r<($7$^$9:

```
set term png font arial 11
set term png font "arial,11"
```

$h$j>\$7$$>pJs$K$D$$$F$O! "**fonts** $N2<$N3:Ev$9$k%;%/%7%g%s$r;2>H$7$F$/$@$5$$!#

=PNOI A2h%5%$%:<x,y> $O%T%/%;%kC10L$GM?$($^$9!#%G%U%)%k%H$O 640x480 $G$9!#0J2<$b;2>H: **canvas (p. 25)**, **set size (p. 169)**!#I A2h=*N;8e$NC<$NM>Gr$O! "%*%W%7%g%s **crop** $G<h$j=|$/$3$H$,$G$-! "$=$N7k2L$H$7$F$=$N2hA|%5%$%:$O>.$5$/$J$j$^$9!#%G%U%)%k%H$O **nocrop** $G$9!#

Nc

```
set terminal png medium size 640,480 background '#ffffff'
```

$3$NNc$O medium %5%$%:$N! "Bg$-$5JQ99IT G=$G2sE>$G$-$J$$AH$_9~$_%U%)%s%H$r;HMQ$7! "F)L@2=$5$l$J$$GX7J?'$H$7$FGr (16 ?J?t$N 24bit RGB) $r;HMQ$7$^$9!#

```
set terminal png font arial 14 size 800,600
```

$3$l$O! "'arial' $H$$$&%U%'!<%9L>$N%9%1!<%i%V%k%U%)%s%H$r8!:w$7! "%U%)%s%H%5%$%:$r 14pt $K@_Dj$7$^$9!#%U%)%s%H$N8!:w$,$I$N$h$&$K9T$o$l$k$+$K$D$$$F$O0J2<;2>H: **fonts (p. 37)**!#

```
set terminal png transparent truecolor enhanced
```

$3$l$O! "24 %S%C%H/%T%/%;%k$N?'>pJs$r;HMQ$7! "GX7J$rF)L@2=$7$^$9!#$=$7$FI=<($5$l$kJ8;zNs$NG[CV@)8f$H$7$F **enhanced text** %b!<%I$r;HMQ$7$^$9!#

## Pngcairo

=PNO7A<0 **pngcairo** $O! "PNG =PNO$r@8@.$7$^$9!#<B:]$NI A2h$O! "2D %0%i%U%#%C%/%i%$%V%i%j$G$"$k cairo $H! "J8;zNs$NG[CV$H%l%s%@%j%s%0MQ$N%i%$%V%i%j pango $r7PM3$7$F9T$o$l$^$9!#

=q<0:

```
set term pngcairo
             {{no}enhanced} {mono|color}
             {{no}transparent} {{no}crop} {background <rgbcolor>
             {font <font>} {fontscale <scale>}
             {linewidth <lw>} {rounded|butt|square} {dashlength <dl>}
             {pointscale <ps>}
             {size <XX>{unit},<YY>{unit}}
```

$3$N=PNO7A<0$O!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $r%5%]!<%H$7$F$$$F!"%U%)%s%H$d=q<0%3%^%s%I (>eIU!"2<IU$J$I) $r%i%Y%k$dB>$NJ8;zNs$KKd$a9~$`$3$H$,$G$-$^$9!#3HD%J8;zNs=hM}%b!<%I$N=q<0$OB>$N gnuplot $N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **enhanced (p. 27)**!#

IA2h$K$*$1$kA4$F$N@~$NI}$O!"0x;R <lw> $GJQ99$G$-$^$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7$^$9!#%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

PNG =PNO$N%G%U%)%k%H$N%5%$%:$O!"640 x 480 %T%/%;%k$G$9!#%*%W%7%g%s **size** $O!"$3$l$r%f!<%6$N;XDj$9$k$b$N$XJQ99$7$^$9!#%G%U%)%k%H$N X, Y %5%$%:$NC10L$O%T%/%;%k$G$9$,!"B>$NC10L$b;HMQ2DG=$G$9 (8=:_$O cm $H%$%s%A)!#%5%$%:$r cm $+%$%s%A$GM?$($k$H$=$l$O!"2rA|EY 72 dpi $G$N%T%/%;%k?t$KJQ49$5$l$^$9!#**size** %*%W%7%g%s$G;XDj$5$l$?$3$H$K$h$kIA2h$NC<$+$iC<$^$G$NNN0h$O!">o$K%9%/%j!<%s:BI8$N 0.0 $+$i 1.0 $KBP1~$7$^$9!#

<font> $O!""FontFace,FontSize" $N=q<0!"$D$^$j%U%)%s%HL>$H%5%$%:$r%+%s%^$G6h@Z$C$?0l$D$NJ8;zNs$H$7$FI=5-$7$^$9!#FontFace $O!"'Arial' $N$h$&$JDL>o$N%U%)%s%HL>$G$9!#%U%)%s%HL>$rM?$($J$$>l9g!"pngcairo =PNO7A<0$G$O'Sans' $,;HMQ$5$l$^$9!#FontSize $O%]%$%s%HC10L$G$N%U%)%s%H%5%$%:$G$9!#;XDj$7$J$$>l9g$O!" pngcairo =PNO7A<0$G$O 12 %]%$%s%H$N%5%$%:$,;HMQ$5$l$^$9!#

Nc :

```
set term pngcairo font "Arial,12"
set term pngcairo font "Arial" # %U%)%s%HL>$N$_JQ99
set term pngcairo font ",12" # %U%)%s%H%5%$%:$N$_JQ99
set term pngcairo font "" # %U%)%s%HL>$H%5%$%:$r%j%;%C%H
```

%U%)%s%H$O!"DL>o$N%U%)%s%H=hM}5!9=$K$h$j<hF@$5$l$^$9!#Windows $G$O!"%U%)%s%H$O%3%s%H%m!<%k%Q%M%k$N "%U%)%s%H" $N9`L\$G9=@.$5$l8+$D$1$i$l$k$b$N$G!"UNIX $G$O!"%U%)%s%H$O "fontconfig" $G=hM}$5$l$^$9!#

J8;zNs$N%l%$%"%&%H$K;HMQ$5$l$k%i%$%V%i%j Pango $O!"utf-8 $K4p$E$$$F$$$^$9$N$G!"pngcairo =PNO7A<0$G$O!"J8;z%3!<%I$r utf-8 $KJQ49$9$kI,MW$,$"$j$^$9!#%G%U%)%k%H$NF~NOJ8;z%3!<%I$O!"$"$J$?$,;HMQ$7$F$$$k 'locale' $K4p$E$-$^$9!#B>$NJ8;z%3!<%I$K$7$?$$>l9g$O!"$"$J$?$,$I$NJ8;z%3!<%I$r;H$C$F$$$k$N$+$r3N<B$K gnuplot $,$o$+$k$h$&$K$7$F$/$@$5$$!#>\:Y$K$D$$$F$O!"0J2<;2>H: **encoding (p. 128)**!#

pango $O!"unicode %^%C%T%s%0$G$J$$%U%)%s%H$KBP$7$F$OM=4|$;$L7k2L$rM?$($k$+$b$7$l$^$;$s!#Nc$($P Symbol %U%)%s%H$KBP$7$F$O!"pngcairo =PNO7A<0$O!"J8;z%3!<%I$r unicode $KJQ49$9$k$?$a$K http://www.unicode.org/ $GDs6!$5$l$k%^%C%T%s%0$rMxMQ$7$^$9!#$J$*!""the Symbol font" $O!"Acrobat Reader $H0l=o$K "SY______.PFB" $H$7$FG[I[$5$l$F$$$k Adobe Symbol %U%)%s%H$G$"$k$H2r<a$5$l$k$3$H$KCm0U$7$F$/$@$5$$!#$3$NBe$o$j$K!" OpenOffice.org $H0l=o$K "opens___.ttf" $H$7$FG[I[$5$l$k OpenSymbol %U%)%s%H$,F1$8J8;z$rDs6!$7$F$$$^$9!#Microsoft $b Symbol %U%)%s%H ("symbol.ttf") $rG[I[$7$F$$$^$9$,!"$3$l$O0[$J$kJ8;z%;%C%H$K$J$C$F$$$F!"$$$/$D$+$O7g$1$F$$$^$9$7!"$$$/$D$+$O?t<05-9f$KJQ$o$C$F$7$^$C$F$$$^$9!#$"$J$?$N%G%U%)%k%H$N@_Dj$G$J$s$i$+$NLdBj$,5/$-$?>l9g (Nc$($P%G%b%9%/%j%W%H enhancedtext.dem $,$A$c$s$HI=<($5$l$J$$$H$$$C$?>l9g) $O!"Adobe $+ OpenOffice $N Symbol %U%)%s%H$r%$%s%9%H!<%k$7$F!"Microsoft $N Symbol %U%)%s%H$r:o=|$7$J$$$H$$$1$J$$$+$b$7$l$^$;$s!#

%l%s%@%j%s%0$O!"cairo $H pango %i%$%V%i%j$,%5%]!<%H$9$kHO0OFb$G!"%*!<%P!<%5%s%W%j%s%0$H%"%s%A%(%$%j%"%9!"%U%)%s%H$N%R%s%F%#%s%0$r9T$$$^$9!#

## Postscript

**postscript** %I%i%$%P$G$O$$/$D$+$N%*%W%7%g%s$,@_Dj$G$-$^$9!#

=q<0:

```
set terminal postscript {default}
set terminal postscript {landscape | portrait | eps}
                        {enhanced | noenhanced}
                        {defaultplex | simplex | duplex}
                        {fontfile [add | delete] "<filename>"
                         | nofontfiles} {{no}adobeglyphnames}
                        {level1 | leveldefault | level3}
                        {color | colour | monochrome}
                        {background <rgbcolor> | nobackground}
                        {dashlength | dl <DL>}
                        {linewidth | lw <LW>} {pointscale | ps <PS>}
```

```
                              {rounded | butt}
                              {clip | noclip}
                              {palfuncparam <samples>{,<maxdeviation>}}
                              {size <XX>{unit},<YY>{unit}}
                              {blacktext | colortext | colourtext}
                              {{font} "fontname{,fontsize}" {<fontsize>}}
                              {fontscale <scale>}
```

0J2<$N$h$&$J% (%i!<%a%C%;!<%8$,=P$?>l9g:

```
    "Can't find PostScript prologue file ... "
```

0J2<;2>H **postscript prologue (p. 245)**!#$=$7$F$=$N;X<($K=>$C$F$/$@$5$$!#

**landscape** $H **portrait** $O=PNO$,2#CV$+!"=DCV$+$rA*Br$7$^$9!#**eps** %b!<%I$O EPS (Encapsulated PostScript) =PNO$r@8@.$7$^$9$,!"$3$l$ODL>o$N PostScript $K!"$=$l$rB>$NB?$/$N%"%W%j%1!<%7%g%s$G<h$j9~$`$3$H$,$G$-$k$h$&$K$$$/$D$+$N9T$rDI2C$7$?$b$N$G$9 (DI2C$5$l$k9T$O PostScript $N%3%a%s%H9T$J$N$G!"$h$C$F$=$l<+?H $b$A$c$s$H0u:~$G$-$^$9)!#EPS =PNO$rF@$k$K$O **eps** %b!<%I$r;HMQ$7!"1 $D$N%U%!%$%k$K$O 1 $D$N%0%i%U$N$_!"$H$7$F$/$@$5$$!#**eps** %b!<%I$G$O%U%)%s%H$b4^$a$F%0%i%U4BN$,%G%U%)%k%H$NBg$-$5$NH>J,$K=L$a$i$l$^$9!#

**enhanced** $O3HD%J8;zNs=hM}%b!<%I (>eIU$-J8;z!"2<IU$-J8;z!"$*$h$SJ#?t$N%U%)%s%H$NMxMQ) $N5!G=$rM-8z$K$7$^$9!#>\:Y$O!"0J2<;2>H **enhanced (p. 27)**!#**blacktext** $O!"$?$H$(%+%i!<%b!<%I$G$bA4$F$NJ8;zNs$r9u$G=q$-$^$9!#

PostScript $NN>LL0u:~L?Na (duplex) $O!"%W%j%s%?$G1Kg$N;f$KN>LL0u:~$9$k$3$H$r2DG=$K$7$^$9!#**defaultplex** $O%W%j%s%?$N%G%U%)%k%H$N@_Dj$r;HMQ$7!"**simplex** $O;f$NJRLL$N$_0u:~!"**duplex** $O N>LL0u:~$r9T$J$$$^$9 ($"$J$?$N%W%j%s%?$,$=$l$r9T$J$($J$$$J$iL5;k$5$l$^$9)!#

"**<fontname>**" $OM-8z$J PostScript %U%)%s%H$NL>A0$G!"**<fontsize>** $O PostScript %]%$%s%HC10L$G$N%U%)%s%H$NBg$-$5$G$9!#I8=`E*$J postscript %U%)%s%H0J30$K!"?t<0$rI=8=$9$k$N$KJXMx$J obliqueSymbol %U%)%s%H ("Symbol-Oblique") $,Dj5A$5$l$F$$$^$9!#

**default** $OA4$F$N%*%W%7%g%s$r0J2<$N%G%U%)%k%H$NCM$K@_Dj$7$^$9: **landscape**, **monochrome**, **dl 1.0**, **lw 1.0**, **defaultplex**, **enhanced**, "Helvetica", 14pt!#PostScript $N%0%i%U$N%G%U%)%k%H$NBg$-$5$O!"10 %$%s%A$N I}$G 7 %$%s%A$N9b$5$G$9!#%*%W%7%g%s **color** $O%+%i!<$rM-8z$K$7!"**monochrome** $O3FMWAG$r9u$HGrI2h$7$^$9!#$5$i$K!"**monochrome** $O3%?'$N **palette** $b;HMQ$7$^$9$,!"$3$l$O!"L@<(E*$K **colorspec** $G;XDj$5$l$?ItI J$N?'$rJQ99$7$^$;$s!#

**dashlength** $^$?$O **dl** $OE@@~$N@~J,$ND9$5$r <DL> (0 $h$jBg$-$$<B?t) $K@_Dj$7!"**linewidth** $^$?$O **lw** $OA4$F$N@~$NI}$r <LW> $K@_Dj$7$^$9!#

%G%U%)%k%H$G$O!"@8@.$5$l$k PostScript %3!<%I$O!"FC$K%U%#%k%?%j%s%0 $dfilledcurves $N$h$&$J$G$3$\$3$JNN 0h$N%Q%?!<%sEI$j$D$V$7$K$*$$$F!"PostScript Level 2 $H$7$F>R2p$5$l$F$$$k8@8l5!G=$r;H$$$^$9!#PostScript Level 2 $N5!G=$O>r7oE*$KJ]8n$5$l$F$$$F!"PostScript Level 1 $N%$%s%?!<%W%j%?$,%(%i!<$r=P$5$:!"$`$7$m %a%C%;!<%8$+ PostScript Level 1 $K$h$k6a;w$G$"$k$3$H$rI=<($9$k$h$&$K$J$C$F$$$^$9!#**level1** %*%W%7%g%s$O!"$3$l$i$N5!G=$r6a;w$9$k PostScript Level1 $GBeMQ$7!"PostScript Level 2 %3!<%I$r0l@Z;HMQ$7$^$;$s!#$3$l$O 8E$$%W%j%s%?$d!"Adobe Illustrator $N8E$$%P!<%8%g%s$J$I$GI,MW$K$J$k$+$b$7$l$^$;$s!#$3$N%U%i%0 **level1** $O=PNO$5$l$? PostScript %U%!%$%k$N$"$k0l9T$r<j$GJT=8$9$k$3$H$G!"8e$+$i6/@)E*$K PostScript Level 1 5!G=$r ON/OFF $K$9$k$3$H$b$G$-$^$9!#level 2 $N%3!<%I$,4^$^$l$F$$$k>l9g!">e$N5!G=$O8=$o$l$J$$$+!"$3$N%U%i%0$,%;%C%H$5$l$?>l9g!"$"$k$$$O PostScript %$%s%?%W%j%?%W%m%0%i%`$,level 2 0J>e$N PostScript $r2r<a $9$k$H$O8@$o$J$+$C$?>l9g$K7Y9pJ8$KCV$-49$o$j$^$9!#**level3** %*%W%7%g%s$O!"%S%C%H%^%C%W2hA|$N PNG 2=$N 5!G=$rM-8z$K$7$^$9!#$=$l$K$h$j=PNO%5%$%:$r$+$J$j:o8:$G$-$^$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7!"%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

**clip** $O!"PostScript $K$9$Y$F$N=PNO$r BoundingBox (PostScript $N3OOH) $G%/%j%C%W$9$k$3$H$r;X<($7$^$9; %G%U%)%k%H$O **noclip** $G$9!#

**palfuncparam** $O **set palette functions** $+$i=PNO$N7 9$-$r$I$N$h$&$K%3!<%I2=$9$k$+$r@)8f$7$^$9!#2r@O E*$J?'$N@.J,4X?t (**set palatte functions** $G@_Dj$5$l$k) $O!"postscript =PNO$G$O7 9$-$N@~7AJd40$rMQ$$$F %3!<%I2=$5$l$^$9: $^$:?'$N@.J,4X?t$, <samples> 8D$NE@$GI8K\2=$5$l!"$=$7$F$=$l$i$NE@$O!"7k2L$H$7$F @~7AJd40$H$NJP:9$, <maxdeviation> 0JFb$K<}$^$k$h$&$K:o=|$5$l$^$9!#$[$H$s$IA4$F$NM-8z$J%Q%l%C%H$G!" %G%U%)%k%H$N <samples> =2000 $H <maxdeviation>=0.003 $NCM$r$=$N$^$^;H$&$N,NI$$G$7$g$&!#

PostScript =PNO$N%G%U%)%k%H$NBg$-$5$O 10 %$%s%A x 7 %$%s%A$G$9!#EPS =PNO$N%G%U%)%k%H$NBg$-$5$O 5 x 3.5 %$%s%A$G$9!#%*%W%7%g%s **size** $O$3$l$i$r%f!<%6$,;XDj$7$?$b$N$KJQ99$7$^$9!#%G%U%)%k%H$G$O X $H Y $N%5%$

%:$NC10L$O%$%s%A$H$_$J$5$1$^$9$,!"B>$NC10L(8=:_$Ocm $N$_) $b;H$&3$H$O$G$-$^$9!#IA2h$N BoundingBox (PostScript %U%!%$%k$N3OOH) $O!"%5%$%:$,JQ99$5$1$?2hA|$rCzEY4^$`$h$&$K@5$7$/@_Dj$5$1$^$9!#%9%/%j!<%s:BI8$O!"%*%W%7%g%s **size** $G;XDj$5$1$?IA2hOH$NA4BN$, 0.0 $+$i 1.0 $K$J$j$^$9!#CmOU: $3$1$O!"0JA0$O!"=PNO7A<0$G$N@_Dj$h$j$b!"%3%^%s%I **set size** $G@_Dj$7$?J}$,$$$$!"$H8@$C$F$$$?$3$H$NJQ99$rOUL#$7$^$9!#0JA0$NJ}K!$G$O BoundingBox $OJQ99$5$1$:$K;D$C$F$7$^$$!"%9%/%j!<%s:BI8$,<B:]$NIA2h$N8B3&$KBP1~$7$F$$$^$;$s$G$7$?!#

**fontfile** $d **fontfile add** $G;XDj$5$1$?%U%)%s%H$O!"$=$N%U%)%s%H$N%U%)%s%HDj5A$rD>@\ postscript Type 1, TrueType %U%)%s%H$+$i gnuplot $Npostscript =PNO$NCf$K%+%W%;%k2=$7$^$9!#$h$C$F!"$=$NKd$a9~$^$1$?%U%)%s%H$O8+=P$7!"%?%$%H%k$J$I$K;H$&3$3$H$,$G$-$^$9!#>\:Y$O!"0J2<;2>H: **postscript fontfile (p. 243)**!#**fontfile delete** $K$h$C$F%U%)%s%H%U%!%$%k$rKd$a9~$^$1$k%U%!%$%k$N0lMw$+$i<h$j=|$/$3$H$,$G$-$^$9!#**nofontfiles** $OKd$a9~$_%U%)%s%H$N%j%9%H$r%/%j%"$7$^$9!#

Nc:

```
     set terminal postscript default       # 0JA0$N postscript
     set terminal postscript enhanced      # 0JA0$N enhpost
     set terminal postscript landscape 22  # 0JA0$N psbig
     set terminal postscript eps 14        # 0JA0$N epsf1
     set terminal postscript eps 22        # 0JA0$N epsf2
     set size 0.7,1.4; set term post portrait color "Times-Roman" 14
     set term post "VAGRoundedBT_Regular" 14 fontfile "bvrr8a.pfa"
```

@~$NI}$HE@$NBg$-$5$O **set style line** $GJQ99$G$-$^$9!#

**postscript** %I%i%$%P$OLs 70 <oN`$N0[$J$kE@<o$r%5%]!<%H$7$F$$$F!"$3$1$O **plot** $d **set style line** $N **pointtype** %*%W%7%g%s$GA*Br$G$-$^$9!#

**gnuplot** $H Postscript $K4X$9$kB?J,M-MQ$H;W$o$1$k%U%!%$%k$, **gnuplot** $NG[I[J*!"$^$?$O$=$NG[I[%5%$%H$N /docs/psdos %5%V%G%#%1%/%H%j$Fb$K$$$/$D$+4^$^$1$F$$$^$9!#$=$3$K$O "ps_symbols.gpi" (<B9T$9$k$H **postscript** %I%i%$%P$G;H$($kA4$F$N5-9f$r>R2p$9$k "ps_symbols.ps" $H$$$&%U%!%$%k$r@8@.$9$k **gnuplot** $N%3%^%s%I%U%!%$%k)!""ps_guide.ps" (3HD%$5$1$?=q<0$K4X$9$kMWLs$H!"J8;zNsFb$G8 ?J%3!<%I$G@8@.$5$1$k$b$N!"symbol %U%)%s%HEy$r4^$`PostScript %U%!%$%k)!""ps_file.doc" (**gnuplot** $G:n$i$1$kPostScript %U%!%$%k$N9=B$$N@bL@$r4^$`%F%-%9%H%U%!%$%k)!""ps_fontfile_doc.tex" (?t<0%U%)%s%H$NJ8;z$N0lMw$H LaTeX $N%U%)%s%H$NKd$a9~$_$K4X$9$kC;$$@bL@$r4^$`LaTeX %U%!%$%k) $,$"$j$^$9!#

PostScript %U%!%$%k$OJT=82DG=$G!"0lEY **gnuplot** $G$=$1$r:n$1$P!"$=$1$rK>$`$h$&$K=$@5$9$k$3$H$O<+M3$K9T$J$($^$9!#$=$N$?$a$N%R%s%H$rF@$k$K$O!"0J2<;2>H: **editing postscript (p. 243)** $N@a!#

## PostScript $NJT=8 (editing postscript)

PostScript 8@8l$O$H$F$bJ#;($J8@8l$G!"$3$3$G>\:Y$r5-=R$9$k$3$H$O$H$F$b$G$-$^$;$s!#$=$1$G$b!"**gnuplot** $G:n$i$1$k PostScript %U%!%$%k$K$O!"CWL?E*$J%(%i!<$r$=$N%U%!%$%k$KF3F~$7$F$7$^$&4m81@-$N$J$$JQ99$r9T$J$&3$3$H$,2DG=$JItJ,$,$"$j$^$9!#

Nc$($P!"PostScript $NJ8 "/Color true def" (**set terminal postscript color** %3%^%s%I$KEz$($F%U%!%$%k$K=q$-9~$^$1$^$9) $rJQ99$7$F!"$=$NIA2h$rGr9u$N$b$N$K$9$kJ}K!$O$*$o$+$j$G$7$g$&!#F1MM$K!"@~$N?'!"J8;z$N?'!"@~$NB@$5(weight)!"5-9f$N%5%$%:$b!"K\Ev$K4JC1$K=q$-4$9$($i$1$k$G$7$g$&!#%?%$%H%k$d8+=P$7$J$I$NJ8;zNs$N8m?"$d!"%U%)%s%H$NJQ99$bJT=82DG=$G$7$g$&!#G$0U$N$b$N$NG[CV$bJQ99$G$-$^$9$7!"$bA$m$s!"G$0U$N$b$N$rDI2C$7$?$j!":o=|$7$?$j$b$G$-$^$9$,!"$=$1$i$N=$@5$O PostScript 8@8l$N?<$$CN<1$,I,MW$G$7$g$&!#

**gnuplot** $K$h$C$F:n$i$1$k PostScript %U%!%$%k$N9=@.$K4X$7$F$O!"gnuplot $N%=!<%9G[I[J*Fb$N docs/ps %G%#%1%/%H%j$N%F%-%9%H%U%!%$%k "ps_file.doc" $K=R$Y$i$1$F$$$^$9!#

### Postscript fontfile

%*%W%7%g%s **fontfile** $^$?$O **fontfile add** $O 1 $D$N%U%!%$%kL>$r0z?t$H$7$F; }$A!"$=$N%U%!%$%k$r postscript =PNOFb$K%+%W%;%k2=$7$FKd$a9~$_!"$=$1$K$h$C$FMM!9$JJ8;zNsMWAG(%i%Y%k!"L\@9$j8+=P$7!"%?%$%H%kEy) $r$=$N%U%)%s%H$G=PNO$9$k$3$H$r2DG=$K$7$^$9!#%*%W%7%g%s **fontfile delete** $b1 $D$N%U%!%$%kL>$r0z?t$K; }$A!"$=$N%U%!%$%kL>$r%+%W%;%k2=$5$1$k%U%!%$%k$N%j%9%H$+$i:o=|$7$^$9!#

postscript =PNO%I%i%$%P$O$$/$D$+$N%U%)%s%H%U%!%$%k7A<0$rG'<1$7$^$9: ASCII 7A<0$N Type 1 %U%)%s%H (3HD%;R ".pfa")!"%P%$%J%j7A<0$N Type 1 %U%)%s%H (3HD%;R ".pfb")!"TrueType %U%)%s%H (3HD%;R ".ttf")!#pfa

%U%!%$%k$OD>@\G’<1$5$l$^$9$,!"pfb $H ttf %U%!%$%k$O gnuplot $N<B9TCf$KJB9T$7$FJQ49$5$l!"$=$N$?$a$KE,@Z$JJQ49%D!<%k (2<5-; 2>H) $,%$%s%9%H!<%k$5$l$F$$$kI,MW$,$"$j$^$9!#%U%!%$%kL>$O3HD%;R$b4^$a$F40A4$J7A$G;XDj$9$kI,MW$,$"$j$^$9!#3F **fontfile** %*%W%7%g%s$O$A$g$&$I0l$D$N%U%)%s%H%U%!%$%kL>$KBP1~$7$^$9$N$G!"J#?t$N%U%)%s%H%U%!%$%k$rKd$a9~$`$?$a$K$O$3$N%*%W%7%g%s$rJ#?t2s;H$C$F2<$5$$!#

%U%)%s%H%U%!%$%k$O!":n6H%G%#%l%/%H%j!"$=$7$F **set fontpath** $GM?$($i$l$k%U%)%s%H%Q%90lMw$NA4$F$N%G%#%l%/%H%j$,8!:w$5$l$^$9!#$5$i$K!"4D6-JQ?t GNUPLOT_FONTPATH $G%U%)%s%H%Q%9$r@_Dj$9$k$3$H$b$G$-$^$9!#$=$l$,@_Dj$5$l$F$$$J$$>l9g$O%G%U%)%k%H$N8!:w%j%9%H$,;H$o$l$^$9$,!"$3$l$O%7%9%F%`$K0MB8$7$^$9!#>\:Y$O!"0J2<;2>H: **set fontpath (p. 130)**!#

Kd$a9~$^$l$?%U%)%s%H%U%!%$%k$r;H$&$K$O!"%U%)%s%HL> (DL>o%U%!%$%kL>$HF1$8$G$O$"$j$^$;$s) $r;XDj$9$kI,MW$,$"$j$^$9!#BPOC%b!<%I$G **fontfile** %*%W%7%g%s$r;H$C$F%U%)%s%H$rKd$a9~$s$@>l9g!"%U%)%s%HL>$O%9%/%j!<%s$KI=<($5$l$^$9!#Nc:

```
Font file ’p052004l.pfb’ contains the font ’URWPalladioL-Bold’. Location:
/usr/lib/X11/fonts/URW/p052004l.pfb
```

pfa $d pfb %U%)%s%H$G$O!"%U%)%s%HL>$O%U%)%s%H%U%!%$%kFb$K8+$D$1$k$3$H$,$G$-$^$9!#%U%)%s%H%U%!%$%kCf$K "/FontName /URWPalladioL-Bold def" $N$h$&$J9T$,$"$j$^$9$,!"$3$N??Cf$NJ*$+$i / $r=|$$$?$b$N$,%U%)%s%HL>$G$9!#$3$NNc$N>l9g$O "URWPalladioL-Bold" $H$J$j$^$9!#TrueType %U%)%s%H$G$O!"%U%)%s%HL>$O%P%$%J%j7A<0$GJ]B8$5$l$F$$$k$N$G8+$D$1$k$N$OMF0W$G$O$"$j$^$;$s!#$5$i$K!"$=$NL>A0$OB?$/$N>l9g!"Type 1 %U%)%s%H (<B9TCf$K TrueType $,JQ49$5$l$k7A<0$G$"$k) $G$O%5%]!<%H$5$l$F$$$J$$!"%9%Z!<%9$r4^$s$@7A<0$K$J$C$F$$$^$9!#$=$N$?$a!"%U%)%s%HL>$O$=$3$+$i%9%Z!<%9$r<h$j=|$$$?7A$KJQ49$5$l$^$9!#gnuplot $G;H$&$?$a$K@8@.$5$l$?%U%)%s%HL>$,2?$G$"$k$+$rCN$k:G$b4JC1$JJ}K!$O!"gnuplot $rBPOC%b!<%I$G5/F0$7$F!"0J2<$N$h$&$KF~NO$9$k$3$H$G$9:"set terminal postscript fontfile ’<filename.ttf>’".

%U%)%s%H%U%!%$%k (ttf, pfb) $r pfa 7A<0$KJQ49$9$k$?$a$K!"%U%)%s%H%U%!%$%k$rFI$s$G!"$=$7$FJQ497k2L$rI8=`=PNO$KEG$-=P$9JQ49%D!<%k$,I,MW$K$J$j$^$9!#$=$N=PNO$rI8=`=PNO$K=q$-=P$9$3$H$,$G$-$J$$>l9g!"<B9TCf$NJQ49$O$G$-$^$;$s!#

pfb %U%!%$%k$KBP$7$F$O!"Nc$($P "pfbtops" $,;H$($^$9!#$=$l$,%7%9%F%`$K%$%s%9%H!<%k$5$l$F$$$l$P!"<B9TCf$NJQ49$O$&$^$/$$$/$O$:$G$9!#pfb %U%!%$%k$N%+%W%;%k2=$r$A$g$C$H$d$C$F$_$^$7$g$&!#$b$7%W%m%0%i%`$NJQ49;~$K@5$7$/%D!<%k$r8F$S=P$7$F$$$J$$>l9g$O!"$I$N$h$&$K%D!<%k$r8F$S=P$7$?$iNI$$$+$r4D6-JQ?t GNUPLOT_PFBTOPFA $K!"Nc$($P "pfbtops %s" $N$h$&$KDj5A$7$F2<$5$$!#**%s** $O%U%)%s%H%U%!%$%kL>$KCV$-49$($i$l$^$9$N$G!"$3$l$O$=$NJ8;zNs$KI,$:I,MW$G$9!#

<B9TCf$NJQ49$r$7$?$/$J$/$F!"$1$l$I$b pfa 7A<0$N%U%!%$%k$OI,MW$G$"$k>l9g!""pfb2pfa" $H$$$& C $G=q$+$l$?4JC1$J%D!<%k$r;H$($PNI$$$G$7$g$&!#$3$l$OBgDq$N C %3%s%Q%$%i$G%3%s%Q%$%k$G$-!"$?$/$5$s$N ftp %5!<%P$KCV$$$F$"$j$^$9!#Nc$($P ftp://ftp.dante.de/tex-archive/fonts/utilities/ps2mf/

<B:]$K "pfbtopfa" $H "pfb2ps" $OF1$8:n6H$r9T$$$^$9!#"pfbtops" $O7k2L$N pfa %3!<%I$rI8=`=PNO$K=PNO$7$^$9$,!""pfbtopfa" $O%U%!%$%k$K=PNO$7$^$9!#

TrueType %U%)%s%H$O!"Nc$($P "ttf2pt1" $H$$$&%D!<%k$r;H$C$F Type 1 pfa %U%)!<%^%C%H$KJQ49$G$-$^$9!#$3$l$O0J2<$K$"$j$^$9: http://ttf2pt1.sourceforge.net/

$b$7 gnuplot $KAH$_9~$^$l$F$$$kJQ49<j=g$,$&$^$/9T$+$J$$>l9g!"JQ49%3%^%s%I$O4D6-JQ?t GNUPLOT_TTFTOPFA $GJQ99$G$-$^$9!#ttf2pt1 $r;H$&>l9g$O!"$=$l$r "ttf2pt1 -a -e -W 0 %s - " $N$h$&$K@_Dj$7$F2<$5$$!#$3$3$G$b **%s** $O%U%!%$%kL>$r0UL#$7$^$9!#

FC<l$JMQES$N$?$a$K!"%Q%$%W$b;H$($k$h$&$K$J$C$F$$$^$9 (%Q%$%W$r%5%]!<%H$7$F$$$k OS >e$G)!#%U%!%$%kL>$r "<" $G;O$a!"$=$N8e$K%W%m%0%i%`8F$S=P$7$rDI2C$7$^$9!#$=$N%W%m%0%i%`=PNO$OI8=`=PNO$X$N pfa %G!<%?$G$J$1$l$P$$$1$^$;$s!#7k2L$H$7$F pfa %U%!%$%k$r!"Nc$($P0J2<$N$h$&$K$7$F%"%/%;%9$G$-$k$3$H$K$J$j$^$9: **set fontfile "< cat garamond.pfa"**!#

Type 1 %U%)%s%H$r<h$j9~$`$3$H$O!"Nc$($P LaTeX J8=qCf$K postscript %U%!%$%k$r<h$j9~$`>l9g$K;H$($^$9!#pfb 7A<0$N "european computer modern" %U%)%s%H ("computer modern" %U%)%s%H$N0l<o) $,3FCO$N CTAN %5!<%P$KCV$+$l$F$$$^$9!#ftp://ftp.dante.de/tex-archive/fonts/ps-type1/cm-super/

Nc$($P!"%U%!%$%k "sfrm1000.pfb" $O!"CfB@!"%;%j%UIU$-!"N)BN$N 10 %]%$%s%H$N%U%)%s%H (%U%)%s%HL> "SFRM1000") $G$9!#computer modern %U%)%s%H$O:#$G$b?t<0$r=q$/$N$KI,MW$G$9$,!"$=$l$O0J2<$K$"$j$^$9: ftp://ftp.dante.de/tex-archive/fonts/cm/ps-type1/bluesky

$3$l$i$K$h$C$F!"TeX MQ$NG$0U$NJ8;z$b;H$($^$9!#$7$+$7!"computer modern %U%)%s%H$O>/$7%(%s%3!<%G%#%s%0$,$*$+$7$/$J$C$F$$$^$9 ($3$N$?$a!"J8;zNs$K$O cmr10.pfb $NBe$o$j$K sfrm1000.pfb $r;H$&$Y$-$G$9)!#TeX %U%)%s%H$N;HMQK!$O$$$/$D$+$N%G%b$N0l$D$GCN$k$3$H$,$G$-$^$9!#**gnuplot** $N%=!<%9G[I[J*$N /docs/psdoc $K

4^$^$1$k%U%!%$%k"ps_fontfile_doc.tex" $K TeX ?t3X%U%)%s%H$NJ8;z$N0lMwI=$,4^$^$1$F$$$^$9!#

%U%)%s%H "CMEX10" (%U%!%$%k "cmex10.pfb") $rKd$a9~$`$H!"gnuplot $ODI2C%U%)%s%H "CMEX10-Baseline" $bDj5A$7$^$9!#$=$1$O!"B>$NJ8;z$K$"$&$h$&$K?bD>J}8~$K$:$i$5$1$?$b$N$G$9 (CMEX10 $O!"5-9f$NE7JU$K%Y!<%9%i%$%s$,$"$j$^$9)!#

### PostScript prologue %U%!%$%k

3F PostScript =PNO%U%!%$%k$O %%Prolog %;%/%7%g%s$r4^$_$^$9$7!"Nc$ ($PJ8;z% (%s%3!<%G%#%s%0$J$I$r4^$`DI2C%f!<%6Dj5A%;%/%7%g%s$r4^$`$+$b$7$1$^$;$;$s!#$3$1$i$N%;%/%7%g%s$O!"gnuplot $N<B9T%U%!%$%kC f$K%3%s%Q%$%k$5$1$F$$$k!"$"$k$$$O$"$J$?$N%3%s%T%e!<%?$NJL$N$H$3$m$KJ]B8$5$1$F$$$kPostScript prologue %U%!%$%k72$+$i%3%T!<$5$1$^$9!#$3$1$i$N%U%!%$%k$,CV$+$1$k%G%U%)%k%H$N%G%#%1%/%H%j$O!"gnuplot $N%$%s%9%H!<%k;~$K@_Dj$5$1$^$9$,!"$3$N%G%U%)%k%H$O gnuplot %3%^%s%I$N **set psdir** $r;H$&$+!"4D6-JQ?t GNUPLOT_PS_DIR $rDj5A$9$k$3$H$GJQ99$G$-$^$9!#0J2<;2>H: **set psdir (p. 167)**!#

### Postscript adobeglyphnames

$3$N@_Dj$O!"UTF-8 %(%s%3!<%G%#%s%0$G$N PostScript =PNO$K$N$_4X78$7$^$9!#$3$1$O!"0x00FF $h$jBg$-$$Unicode %(%s%H%j%]%$%s%H ($D$^$j Latin1 =89g30$N$9$Y$F) $NJ8;z$r5-=R$9$k$N$K;H$o$1$kL>A0$r@)8f$7$^$9!#0lHL$K!"unicode J8;z$O0l0U$NL>A0$r;}$?$:!"$=$1$O unicode <1JIHV9f$7$+;}$A$^$;$s!#$7$+$7!"Adobe $O!"$"$kHO0O$NJ8;z (3HD%%i%F%sJ8;z!"%.%j%7%cJ8;zEy) $KL>A0$r3d$jEv$F$k?d>)5,B'$r;}$C$F$$$^$9!#%U%)%s%H$K$h$C$F$O$3$N5,B'$rMxMQ$7$F$$$k$b$N$"$j$^$9$7!"$=$&$G$J$$$b$N$b$"$j$^$9!#gnuplot $O%G%U%)%k%H$G$O Adobe %0%j%UL>$r;HMQ$7$^$9!#Nc$ ($P!"%.%j%7%cJ8;z$N>.J8;z$N%"%k%U%!$O /alpha $H$J$j$^$9!#**noadobeglyphnames** $r;XDj$7$?>l9g!"$3$NJ8;z$KBP$7$F gnuplot $OBe$o$j$K /uni03B1 $r;H$*$&$H$7$^$9!#$3$N@_Dj$G$*$+$7$/$J$C$?$H$9$1$P!"$=$1$O$=$NJ8;z$,%U%)%s%HFb$K$"$k$K$b$+$+$o$i$:$=$1$,8+$D$+$i$J$$>l9g$G$9!#Adobe %U%)%s%H$KBP$7$F$O!"%G%U%)%k%H$r;H$&$N$,>o$K@5$7$$$+$b$7$1$^$;$s$,!"B>$N%U%)%s%H$G$ON>J}$N@_Dj$r;n$7$F$_$J$$$H$$$1$J$$$+$b$7$1$^$;$s!#0J2<$b;2>H: **fontfile (p. 243)**!#

## Pslatex and pstex

**pslatex** %I%i%$%P$O LaTeX $G8e=hM}$5$1$k=PNO$r@8@.$7!"**pstex** %I%i%$%P$O TeX $G8e=hM}$5$1$k=PNO$r@8@.$7$^$9!#**pslatex** $O dvips $H xdvi $GG'<12DG=$J \special L?Na$r;HMQ$7$^$9!#**pstex** $G@8@.$5$1$k?^$O!"G$0U$N plain-TeX %Y!<%9$N TeX (LaTeX $b$=$&$G$9) $G<h$j9~$`$3$H$,$G$-$^$9!#

=q<0:

```
set terminal [pslatex | pstex] {default}
set terminal [pslatex | pstex]
                         {rotate | norotate}
                         {oldstyle | newstyle}
                         {auxfile | noauxfile}
                         {level1 | leveldefault | level3}
                         {color | colour | monochrome}
                         {background <rgbcolor> | nobackground}
                         {dashlength | dl <DL>}
                         {linewidth | lw <LW>} {pointscale | ps <PS>}
                         {rounded | butt}
                         {clip | noclip}
                         {palfuncparam <samples>{,<maxdeviation>}}
                         {size <XX>{unit},<YY>{unit}}
                         {<font_size>}
```

0J2<$N$h$&$J%(%i!<%a%C%;!<%8$,=P$?>l9g:

```
"Can't find PostScript prologue file ... "
```

0J2<;2>H: **postscript prologue (p. 245)**!#$=$7$F$=$N;X<($K=>$C$F$/$@$5$$!#

%*%W%7%g%s **color** $O%+%i!<$rM-8z$K$7!"**monochrome** $O3FMWAG$r9u$HGrIA2h$7$^$9!#$5$i$K!"**monochrome** $O3%?'$N **palette** $b;HMQ$7$^$9$,!"$3$1$O!"L@<(E*$K **colorspec** $G;XDj$5$1$?ItIJ$N?'$rJQ99$7$^$;$s!#

**dashlength** $^$?$O **dl** $OE@@~$N@~J,$ND9$5$r <DL> (0 $h$jBg$-$$<B?t) $K@_Dj$7!"**linewidth** $^$?$O **lw** $OA4$F$N@~$NI}$r <LW> $K@_Dj$7$^$9!#

%G%U%)%k%H$G$O!"@8@.$5$l$k PostScript %3!<%I$O!"FC$K%U%#%k%?%j%s%0$dfilledcurves $N$h$&$J$G$3$\$3$JNN0h$N%Q%?!<%sEI$j$D$V$7$K$*$$$F!"PostScript Level 2 $H$7$F>R2p$5$l$F$$$k8@8l5!G=$r;H$$$^$9!#PostScript Level 2 $N5!G=$O>r7oE*$KJ]8n$5$l$F$$$F!"PostScript Level 1 $N%$%s%?!<%W%j%?$,%(%i!<$r=P$5$:!"$`$7$m%a%C%;!<%8$+PostScript Level 1 $K$h$k6a;w$G$"$k$3$H$rI=<($9$k$h$&$K$J$C$F$$$^$9!#**level1** %*%W%7%g%s$O!"$3$l$i$N5!G=$r6a;w$9$k PostScript Level1 $GBeMQ$7!"PostScript Level 2 %3!<%I$r0l@Z;HMQ$7$^$;$s!#$3$l$O8E$$%W%j%s%?$d!"Adobe Illustrator $N8E$$%P!<%8%g%s$J$I$GI,MW$K$J$k$+$b$7$l$^$;$s!#$3$N%U%i%0 **level1** $O=PNO$5$l$? PostScript %U%!%$%k$N$"$k0l9T$r<j$GJT=8$9$k$3$H$G!"8e$+$i6/@)E*$K PostScript Level 1 5!G=$r ON/OFF $K$9$k$3$H$b$G$-$^$9!#level 2 $N%3!<%I$,4^$^$l$F$$$k>l9g!">e$N5!G=$O8=$o$l$J$$$+!"$3$N%U%i%0$,%;%C%H$5$l$?>l9g!"$"$k$$$O PostScript %$%s%?%W%j%?%W%m%0%i%`$, level 2 0J>e$N PostScript $r2r<a$9$k$H$O8@$o$J$+$C$?>l9g$K7Y9pJ8$KCV$-49$o$j$^$9!#**level3** %*%W%7%g%s$O!"%S%C%H%^%C%W2hA|$N PNG 2=$N5!G=$rM-8z$K$7$^$9!#$=$l$K$h$j=PNO%5%$%:$r$+$J$j:o8:$G$-$^$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7!"%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

**clip** $O!"PostScript $K$9$Y$F$N=PNO$r BoundingBox (PostScript $N30OH) $G%/%j%C%W$9$k$3$H$r;X<($7$^$9;%G%U%)%k%H$O **noclip** $G$9!#

**palfuncparam** $O **set palette functions** $+$i=PNO$N79$-$r$I$N$h$&$K%3!<%I2=$9$k$+$r@)8f$7$^$9!#2r@OE*$J?'$N@.J,4X?t (**set palatte functions** $G@_Dj$5$l$k) $O!"postscript =PNO$G$O79$-$N@~7AJd40$rMQ$$$F%3!<%I2=$5$l$^$9: $^$:?'$N@.J,4X?t$, <samples> 8D$NE@$GI8K\2=$5$l!"$=$7$F$=$l$i$NE@$O!"7k2L$H$7$F@~7AJd40$H$NJP:9$, <maxdeviation> 0JFb$K<}$^$k$h$&$K:o=|$5$l$^$9!#$[$H$s$IA4$F$NM-8z$J%Q%l%C%H$G!"%G%U%)%k%H$N <samples> =2000 $H <maxdeviation>=0.003 $NCM$r$=$N$^$^;H$&$N$,NI$$$G$7$g$&!#

PostScript =PNO$N%G%U%)%k%H$NBg$-$5$O 10 %$%s%A x 7 %$%s%A$G$9!#EPS =PNO$N%G%U%)%k%H$NBg$-$5$O 5 x 3.5 %$%s%A$G$9!#%*%W%7%g%s **size** $O$3$l$i$r%f!<%6$,;XDj$7$?$b$N$KJQ99$7$^$9!#%G%U%)%k%H$G$O X $H Y $N%5%$%:$NC10L$O%$%s%A$H$_$J$5$l$^$9$,!"B>$NC10L (8=:_$O cm $N$_) $b;H$&$3$H$O$G$-$^$9!#IA2h$N BoundingBox (PostScript %U%!%$%k$N30OH) $O!"%5%$%:$,JQ99$5$l$?2hA|$rCzEY4^$`$h$&$K@5$7$/@_Dj$5$l$^$9!#%9%/%j!<%s:BI8$O!"%*%W%7%g%s **size** $G;XDj$5$l$?IA2hOH$NA4BN$, 0.0 $+$i 1.0 $K$J$j$^$9!#Cm0U: $3$l$O!"0JA0$O!"=PNO7A<0$G$N@_Dj$h$j$b!"%3%^%s%I **set size** $G@_Dj$7$?J}$,$$$$!"$H8@$C$F$$$?$3$H$NJQ99$r0UL#$7$^$9!#0JA0$NJ}K!$G$O BoundingBox $OJQ99$5$l$:$K;D$C$F$7$^$$!"%9%/%j!<%s:BI8$,<B:]$NIA2h$N8B3&$KBP1~$7$F$$$^$;$s$G$7$?!#

**rotate** $,;XDj$5$l$k$H y <4$N8+=P$7$,2sE>$5$l$^$9!#<font_size> $O4uK>$9$k%U%)%s%H$N(%]%$%s%HC10L$G$N)Bg$-$5$G$9!#

**auxfile** $,;XDj$5$l$k$H!"%I%i%$%P$O PostScript %3%^%s%I$r!"LaTeX %U%!%$%k$KD>@\=PNO$9$kBe$o$j$K!"Jd=u%U%!%$%k$K=q$-=P$9$h$&$K$J$j$^$9!#$3$l$O!"dvips $,$=$l$r07$($J$$$/$i$$Bg$-$$%0%i%U$G$"$k>l9g$KM-MQ$G$9!#Jd=u PostScript %U%!%$%k$NL>A0$O!"**set output** %3%^%s%I$GM?$($i$l$k TeX %U%!%$%k$NL>A0$+$iF3$+$l$k$b$N$G!"$=$l$O$=$N:G8e$N **.tex** $NItJ,(<B:]$N%U%!%$%kL>$N:G8e$N3HD%;R$NItJ,)$r **.ps** $GCV$-49$($?$b$N!"$^$?$O!"TeX %U%!%$%k$K3HD%;R$,$J$$$J$i$P **.ps** $r:G8e$KIU$1B-$7$?$b$N$K$J$j$^$9!#**.ps** %U%!%$%k$O \special{psfile=...} $H$$$&L?Na$G **.tex** %U%!%$%k$K<h$j9~$^$l$^$9!#**multiplot** %b!<%I0J30$G$O!"<!$NIA2h$r9T$J$&A0$K$=$N=PNO%U%!%$%k$r%/%m!<%:$9$k$N$rK:$l$J$$$G$/$@$5$$!#

version 4.2 $h$jA0$N gnuplot $O ps(la)tex =PNO7A<0$G$O 5 x 3 %$%s%A$N=PNO$G$7$?$,!"8=:_$G$O 5 x 3.5 %$%s%A$K$J$C$F$$$^$9!#$3$l$O postscript eps =PNO7A<0$K9g$o$;$?JQ99$G$9!#2C$($F!"J8;zI}$O!"0JA0$N epslatex =PNO7A<0$O%U%)%s%H%5%$%:$N 50% $H8+$J$7$^$7$?$,!"8=:_$O 60% $HI>2A$7$F$$$^$9!#=>Mh$N7A<0$KLa$9$K$O!"%*%W%7%g%s **oldstyle** $r;XDj$7$F$/$@$5$$!#

pslatex %I%i%$%P$OJ8;zNs$NG[CV$N@)8f$KFCJL$JJ}K!$rDs6!$7$^$9: (a) '{' $G;O$^$kJ8;zNs$O!"'}' $GJD$8$kI,MW$,$"$j$^$9$,!"$=$NJ8;zNsA4BN$, LaTeX $K$h$C$F?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0$5$l$^$9!#(b) '[' $G;O$^$kJ8;zNs$N>l9g$O!"0LCV$N;XDj$r$9$kJ8;zNs (t,b,l,r $N$&$A2 $D$^$G) $,B3$-!"<!$K ']{'!"J8;zNsK\BN!"$G:G8e$K '}' $H$7$^$9$,!"$3$NJ8;zNs$O LaTeX $, LR-box $H$7$F@07A$7$^$9!#\rule{}{} $r;H$($P$5$i$KNI$$0LCV9g$o$;$,2DG=$G$7$g$&!#

$3$3$K5-=R$5$l$F$$$J$$%*%W%7%g%s$O **Postscript terminal** $N$b$N$HF10l$G$9$N$G!"$=$l$i$,2?$r9T$J$&$N$+$rCN$j$?$1$l$P$=$A$i$r;2>H$7$F$/$@$5$$!#

Nc:

```
     set term pslatex monochrome rotate       # %G%U%)%k%H$K@_Dj
```

PostScript %3%^%s%I$r "foo.ps" $K=q$-=P$9:

```
     set term pslatex auxfile
```

```
set output "foo.tex"; plot ...; set output
```

8+=P$7$N0LCV9g$o$;$K4X$7$F: gnuplot $N%G%U%)%k%H (BgDq$=$l$J$j$K$J$k$,!"$=$&$G$J$$$3$H$b$"$k):

```
set title '\LaTeX\ -- $ \gamma $'
```

?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0:

```
set label '{\LaTeX\ -- $ \gamma $}' at 0,0
```

0LCV$rL@<(E*$K;XDj (>e$K9g$o$;$k):

```
set xlabel '[t]{\LaTeX\ -- $ \gamma $}'
```

B>$N8+=P$7 − L\@9$j$ND9$$8+=P$7$KBP$9$k8+@Q$j:

```
set ylabel '[r]{\LaTeX\ -- $ \gamma $\rule{7mm}{0pt}}'
```

@~I}$HE@$NBg$-$5$O **set style line** $GJQ99$G$-$^$9!#

## Pstricks

**pstricks** %I%i%$%P$O LaTeX $N "pstricks.sty" %^%/%m%Q%C%1!<%8$H6&$K;H$o$l$k$3$H$r0U?^$7$F$$$^$9!#$3$l$O **eepic** $d **latex** %I%i%$%P$KBe$o$kA*Br;h$N0l$D$G$9!#"pstricks.sty" $OI,MW$G$9$,!"$b$A$m$s PostScript $r2r<a$9$k%W%j%s%?!"$^$?$O Ghostscript $N$h$&$JJQ49%=%U%H$bI,MW$G$9!#

PSTricks $O anonymous ftp $G Princeton.EDU $N /pub %G%#%l%/%H%j$+$i<hF@$G$-$^$9!#$3$N%I%i%$%P$O!" PSTricks %Q%C%1!<%8$NA4$F$NG=NO$r;H$*$&$H$J$I$H$OA4$/9M$($F$O$$$^$;$s!#

=q<0:

```
set terminal pstricks {hacktext | nohacktext} {unit | nounit}
```

:G=i$N%*%W%7%g%s$O!"$"$^$je:No$G$O$J$$J}K!$G?t;z$N$h$jNI$$=PNO$r@8@.$9$k$b$N$G!"2 $DL\$N%*%W%7%g%s$O%0%i%U$r?-=L$9$k:]$K$OI,MW$G$9!#%G%U%)%k%H$G$O **hacktext** $H **nounit** $G$9!#

## Qms

**qms** %I%i%$%P$O QMS/QUIC %1!<%6!<%W%j%s%?!"Talaris 1200 !"$=$NB>$r%5%]!<%H$7$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Qt

**qt** =PNO7A<0$O!"Qt %i%$%V%i%j$rMQ$$$FJL%&%#%s%I%&$X$N=PNO$r@8@.$7$^$9!#

=q<0:

```
       set term qt {<n>}
                   {size <width>,<height>}
                   {position <x>,<y>}
                   {title "title"}
                   {font <font>} {{no}enhanced}
                   {linewidth <lw>} {dashlength <dl>}
                   {{no}persist} {{no}raise} {{no}ctrl}
                   {close}
                   {widget <id>}
```

J#?t$NIA2h%&%#%s%I%&$b%5%]!<%H$7$F$$$F!"**set terminal qt <n>** $H$9$l$PHV9f n $NIA2h%&%#%s%I%&$X=PNO$7$^$9!#

%G%U%)%k%H$N%&%#%s%I%&%?%$%H%k$O!"$3$N%&%#%s%I%&HV9f$K4p$E$$$F$$$^$9!#$=$N%?%$%H%k$O%-!<%o!<%I "title" $G$b;XDj$G$-$^$9!#

IA2h%&%#%s%I%&$O!"**gnuplot** $N=PNO7A<0$rJL$J$b$N$KJQ99$7$?8e$G$b3+$$$?$^$^;D$j$^$9!#IA2h%&%#%s%I%&$O!"$=$N%&%#%s%I%&$,F~NO%U%)!<%+%9$r;}$C$F$$$k>uBV$GJ8;z 'q' $rBG$D$+!"%&%#%s%I%&%^%M!<%8%c%a%K%e!<$G **close** $rA*Br$9$k$+!"$^$?$O **set term qt <n> close** $H$9$k$3$H$GJD$8$k$3$H$,$G$-$^$9!#

IA2hNN0h$N%5%$%:$O%T%/%;%kC10L$GM?$($^$9!"%G%U%)%k%H$O640x480 $G$9!#$=$l$K2C$($F!"%&%#%s%I%&$N<B:]$N%5%$%:$K$O!"%D!<%k%P!<$d%9%F!<%?%9%P!<MQ$N%9%Z!<%9$bDI2C$5$l$^$9!#%&%#%s%I%&$N%5%$%:$rJQ99$9$k$H!"IA2h%0%i%U$b%&%#%s%I%&$N?7$7$$%5%$%:$K$T$C$?$j9g$&$h$&$K$9$0$K?-=L$5$l$^$9!#**qt** =PNO7A<0$O%U%)%s%H!"@~I}$b4^$a$FIA2hA4BN$r?-=L$7$^$9$,!"A4BN$N%"%9%Z%/%HHf$O0lDj$KJ]$A$^$9!#$=$N8e **replot** $H%?%$%W$9$k$+!"%?!<%_%J%k%D!<%k%P!<$N **replot** %"%$%3%s$r%/%j%C%/$9$k$+!"?7$?$K **plot** %3%^%s%I$rF~NO$9$k$H!"$=$N?7$7$$IA2h$G$O40A4$K$=$N%&%#%s%I%&$K9g$o$;$i$l$^$9$,!"%U%)%s%H%5%$%:$d@~I}$O$=$l $>$l$N%G%U%)%k%H$K%j%;%C%H$5$l$^$9!#

position %*%W%7%g%s$OIA2h%&%#%s%I%&$N0LCV$r@_Dj$9$k$N$K;H$($^$9!#$3$l$O%3%^%s%I **set term** 8e$N:G=i$NIA2h$K$N$_E,MQ$5$l$^$9!#

8=:_$NIA2h%&%#%s%I%&(**set term qt <n>** $GA*Br$5$l$?$b$N) $OBPOC7?$G!"$=$N5sF0$O!"B>$N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **mouse (p. 148)**!#$=$l$K$OD I2C$N%"%$%3%s$b$$$/$D$+$D$$$F$$$^$9$,!"$=$l$i$O$=$l<+BN$,@bL@E*$J$b$N$K$J$C$F$$$k$O$:$G$9!#

$3$N=PNO7A<0$O!"3HD%J8;zNs=hM}%b!<%I(enhanced text mode) $r%5%]!<%H$7$F$$$F!"%U%)%s%H$d=q<0%3%^%s%I(>eIU!"2<IU$J$I) $r%i%Y%k$dB>$NJ8;zNs$KKd$a9~$`$3$H$,$G$-$^$9!#3HD%J8;zNs=hM}%b!<%I$N=q<0$O!"gnuplot $NB>$N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **enhanced (p. 27)**!#

<font> $O"FontFace,FontSize" $N7A<0$G!"FontFace $H FontSize $H$r%3%s%^$GJ,N%$7$F0l$D$NJ8;zNs$H$7$F=q$-$^$9!#FontFace $O!"'Arial' $N$h$&$JDL>o$N%U%)%s%HL>$G$9!#FontFace $rM?$($J$$>l9g$O!"qt =PNO7A<0$O'Sans' $r;HMQ$7$^$9!#FontSize $O%]%$%s%HC10L$N%U%)%s%H%5%$%:$G$9!#FontSize $rM?$($J$$>l9g$O!"qt =PNO7A<0$O 9 %]%$%s%H$r;HMQ$7$^$9!#

```
 Nc :
     set term qt font "Arial,12"
     set term qt font "Arial" # %U%)%s%HL>$N$_JQ99
     set term qt font ",12" # %U%)%s%H%5%$%:$N$_JQ99
     set term qt font "" # %U%)%s%HL>!"%U%)%s%H%5%$%:$r%j%;%C%H
```

dashlength $O!"E@@~/GK@~%Q%?!<%s$N%f!<%6Dj5A$K$N$_1F6A$rM?$(!"Qt $,FbIt$K;}$C$F$$$k%Q%?!<%s$K$O1F6A$rM?$($^$;$s!#

2DG=$J8B$j:G$bNI$$=PNO$r@8@.$9$k$?$a$K!"$3$N%l%s%@%j%s%0$O%"%s%A%"%j%"%9!"%*!<%P!<%5%s%W%j%s%0!"%R%s%A%s%0$N3 $D$N5!9=$r;}$C$F$$$^$9!#%*!<%P!<%5%s%W%j%s%0$O!"%"%s%A%(%$%j%"%9$HAH$G%T%/%;%k$h$j$b>.$5$$%5%$%:$G$N@:EY$rDs6!$7!"gnuplot $,Hs@0?t:BI8$ND>@~$r=q$1$k$h$&$K$J$j$^$9!#$3$l$O!"BP3QJ}8~$ND>@~(Nc$($P 'plot x') $,:81&$KMI$l$k$N$rHr$1$^$9!#%R%s%F%#%s%0$O!"%*!<%P!<%5%s%W%j%s%0$K$h$C$F0z$-5/$3$5$l$k?eJ?!"?bD>J}8~$N@~J,$N$\$+$7$rHr$1$^$9!#$3$N=PNO7A<0$O!"$3$l$i$ND>@~$r@0?t:BI8$KB7$(!"$=$l$K$h$j!"1 %T%/%;%kI}$ND>@~$OK\Ev$K1 $D(1 $D$h$jB?$/$b>/$J$/$b$J$$) $N%T%/%;%k$GIA2h$7$^$9!#

%G%U%)%k%H$G$O!"IA2h$,9T$o$l$?$H$-$K%&%#%s%I%&$O%G%9%/%H%C%W$N0lHV>e(:GA0LL) $KI=<($5$l$^$9!#$3$l$O!"%-!<%o!<%I "raise" $G@)8f$G$-$^$9!#%-!<%o!<%I "persist" $O!"$9$Y$F$NIA2h%&%$%s%I%&$rL@<(E*$KJD$8$J$$$4V$O!"gnuplot $,=*N;$7$J$$$h$&$K$7$^$9!#:G8e$K!"%G%U%)%k%H$G$O <space> %-!<$O gnuplot %3%s%=!<%k%&%#%s%I%&$r>e$K>e$2 (MS Windows $N$_)!"'q' $OIA2h%&%#%s%I%&$rJD$8$^$9$,!"%-!<%o!<%I"ctrl" $O!"$=$l$i$N%-!<3d$jEv$F$r <ctrl>+<space> $H <ctrl>+'q' $KJQ99$7$^$9!#

%W%m%0%i%`$N%3%s%Q%$%k;~$KA*Br$7$?>l=j$K!"gnuplot $N30It%I%i%$%Pgnuplot_qt $,%$%s%9%H!<%k$5$l$^$9$,!"4D6-JQ?t GNUPLOT_DRIVER_DIR $r@_Dj$9$k$3$H$GCV$->l=j$rJQ99$9$k$3$H$b$G$-$^$9!#

## Regis

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9!#**regis** %I%i%$%P$O REGIS %0%i%U%#%C%/8@8l$G$N=PNO$r@8@.$7$^$9!#$3$N%I%i%$%P$K$O?'$r 4 ?';H$&$+(%G%U%)%k%H) 16 ?';H$&$+$N%*%W%7%g%s$,$"$j$^$9!#

=q<0:

```
     set terminal regis {4 | 16}
```

## Sixelgd

=q<0:

```
     set terminal sixelgd
```

```
                {{no}enhanced}
                {{no}transparent} {rounded|butt}
                {linewidth <lw>} {dashlength <dl>}
                {tiny | small | medium | large | giant}
                {font "<face> {,<pointsize>}"} {fontscale <scale>}
                {size <x>,<y>} {{no}crop} {animate}
                {background <rgb_color>}
```

**sixel** =PNO%U%)!<%^%C%H$O!"85!9 DEC $N%?!<%_%J%k!"%W%j%s%?$G;H$o$l$F$$$?$b$N$G$9!#$3$N%I%i%$%P$O!"gd %i%$%V%i%j$rFbItE*$K;HMQ$7$F:n@.$7$?PNG 2hA|$rJQ49$7$F sixel =PNONs$r@8@.$7$^$9!#sixel =PNONs$O!"$= $l$r:n@.$7$?$H$-$K%?!<%_%J%k>e$KI=<($5$;$k$3$H$,$G$-$^$9$,!"$^$?$O$=$N=PNONs$r%U%!%$%k$K=q$-$@$7$F $*$$$F!"8e$+$i$=$N%U%!%$%k$r%?!<%_%J%k$KEG$-=P$9$3$H$GI=<($KCV$-49$($k$3$H$b$G$-$^$9!#

%*%W%7%g%s **animate** $O!"O"B3$9$k plot L?Na$GA0$N%0%i%U$,>e$K%9%/%m!<%k$7$F>C$($kBe$o$j$K!"3F plot $, %9%/%j!<%s$NF1$8NN0h$r>e=q$-$9$k$h$&$K3F plot $N3+;O;~$K%+!<%=%k0LCV$r%?!<%_%J%k$N:8>e$K%j%;%C%H$7 $^$9!#$3$l$O>l=j8GDj<0%"%K%a!<%7%g%s (in-place animation) $N@8@.MQ$N;EAH$_$G$9!#

**transparent** $O!"%I%i%$%P$KGX7J?'$NF)L@2=(transparent) $r9T$&$h$&;X<($7$^$9!#%G%U%)%k%H$O **notransparent** $G$9!#

%*%W%7%g%s **linewidth** $H **dashlength** $O3HBgN($G!"IA2h$5$l$k$9$Y$F$N@~$K1F6A$rM?$($^$9!#$9$J$o$A!"$3 $l$i$OMM!9$JIA2h%3%^%s%I$GMW5a$5$l$kCM$K$+$1;;$5$l$^$9!#

%G%U%)%k%H$G$O!"sixel =PNO$O!"HV9fIU$-$N 16 ?'$r;HMQ$7$^$9!#%*%W%7%g%s **truecolor** $G$O!"TrueColor PNG 2h A|$r:n@.$7!"$=$l$r 256 ?'$N sixel 2hA|=PNO$K8:?'$7$^$9!#F)2a7?EI$jDY$7%9%?%$%k$K$O!"%*%W%7%g%s **truecolor** $,I,MW$G$9!#0J2<;2>H: **fillstyle (p. 172)**!#**transparent** $NGX7J$O!"HV9fIU$-$N?'2hA|!"TrueColor 2hA|$N$I $A$i$G$b2DG=$G$9!#

**butt** $O@~J,$NIA2h$G!"$=$NC<$NE@$G$N$O$_$@$7$r5/$3$5$J$$IA2h%a%=%C%I$r;H$&$h$&%I%i%$%P$K;X<($7$^$9!# $3$N@_Dj$O!"@~I}$,1 $h$jBg$-$$>l9g$K$N$_M-8z$G$9!#$3$N@_Dj$O!"?eJ?@~!"?bD>@~$NIA2h$N>l9g$KM-MQ$G $7$g$&!#%G%U%)%k%H$O **rounded** (4]$a) $G$9!#

%U%)%s%H$NA*Br$N>\:Y$O!"$d$dJ#;($G$9!#>\:Y$O!"0J2<;2>H: **fonts (p. 37)**!#

=PNOIA2h%5%$%:<x,y> $O%T%/%;%kC10L$GM?$($^$9!#%G%U%)%k%H$O 640x480 $G$9!#0J2<$b;2>H: **canvas (p. 25)**, **set size (p. 169)**!#IA2h=*N;8e$NC<$NM>Gr$O!"%*%W%7%g%s **crop** $G<h$j=|$/$3$H$,$G$-!"$=$N7k2L$H$7$F$=$N 2hA|%5%$%:$O>.$5$/$J$j$^$9!#%G%U%)%k%H$O **nocrop** $G$9!#

$3$N=PNO7A<0$O!"xterm, mlterm, mintty %?!<%_%J%k$G$O%F%9%H$5$l!"F0:n3NG'$5$l$F$$$^$9!#:G8e$N 2 $D$G $O!"256 ?'$N sixel %+%i!<$r4]!9;HMQ$9$k **truecolor** %b!<%I$b%5%]!<%H$7$^$9$,!"G[I[$5$l$F$$$k xterm $O!" sixel %0%i%U%#%C%/%9$H 256 ?'$r%5%]!<%H$9$k$b$N$G$"$k$+$b$7$l$^$;$s$7!"$=$&$G$J$$$+$b$7$l$^$;$s!#

## Svg

$3$N%I%i%$%P$O W3C SVG (Scalable Vector Graphics) %U%)!<%^%C%H$r@8@.$7$^$9!#

=q<0:

```
     set terminal svg {size <x>,<y> {|fixed|dynamic}}
                      {mouse} {standalone | jsdir <dirname>}
                      {name <plotname>}
                      {font "<fontname>{,<fontsize>}"} {{no}enhanced}
                      {fontscale <multiplier>}
                      {rounded|butt|square} {solid|dashed} {linewidth <lw>}
                      {background <rgb_color>}
```

$3$3$G <x> $H <y> $O@8@.$5$l$k SVG %0%i%U$N%5%$%:$G$9$,!"**dynamic** $O svg %S%e!<%o$KIA2h$N%j%5%$%: $r5v$7!"**fixed** $O@dBP%5%$%:$rMW5a$7$^$9 (%G%U%)%k%H)!#

**linewidth <w>** $O?^$NCf$G;HMQ$5$l$kA4$F$N@~$NI}$r0x;R <w> $@$1A}2C$5$;$^$9!#

<font> $O%G%U%)%k%H$H$7$F;H$o$l$k%U%)%s%HL>(%G%U%)%k%H$G$O Arial)!"<fontsize> $O%]%$%s%HC10L$G$N%U%) %s%H%5%$%: (%G%U%)%k%H$O 12) $G$9!#svg %S%e!<%o%=%U%H$O!"$=$N%U%!%$%k$NI=<($N:]$K$OJL$NBeMQ%U%)%s%H $r;H$&$3$H$K$J$k$G$7$g$&!#

3HD%J8;zNs=hM}(enhanced) %b!<%I$N=q<0;XDj$O!"B>$N=PNO7A<0$N>l9g$HF1$8$G$9!#>\:Y$O!"0J2<;2>H: **enhanced (p. 27)**!#

%*%W%7%g%s **mouse** $O!"%^%&%9%H%i%C%-%s%05!G=$H!"BP1~$9$k key >e$G%/%j%C%/$9$k$3$H$G$=$l$>$l$N%0%i%U$NI A2h$r On/Off $K$9$k5!G=$r%5%]!<%H$rDI2C$9$k$3$H$r gnuplot $K;X<($7$^$9!#%G%U%)%k%H$G$O%m!<%+%k%G%#%l%/%H%j!"DL>o$O /usr/local/share/gnuplot/<version>/js Fb$N$"$k%9%/%j%W%H$r;X$9%j%s%/$r<h$j9~$`$3$H$G9T$o$l$^$9$,!"%*%W%7%g%s **jsdir** $KJL$N%m!<%+%k%G%#%l%/%H%j$+!"DL>o$N URL $r;XDj$9$k$3$H$G$3$l$OJQ99$G$-$^$9!#SVG 2hA|$r Web %Z!<%8$KF~$l$k$N$G$"$l$P!"IaDL$O8e<T$N URL $NJ}$r;XDj$7$^$9!#0lJ}$G%*%W%7%g%s **standalone** $O!"%^%&%9A`:n%W%m%0%i%`$r SVG J8=q<+BN$KKd$a9~$_!"30It%j%=!<%9$X$N%j%s%/$O9T$$$^$;$s!#

SVG %U%!%$%k$r2?$+$N30It%U%!%$%k$HAH$_9g$o$;$FMxMQ$7$?$$>l9g!"Nc$($P$=$l$,$"$k Web %Z!<%8$d?FJ8=q$N javascript %3!<%I$+$i;2>H$5$l$F$$$k$h$&$J>l9g!"B>$N SVG %0%i%U$X$N;2>H$H$N>WFM$rHr$1$k$?$a$K0l0UE*$JL>A0$,I,MW$K$J$j$^$9!#$=$N>l9g$O%*%W%7%g%s **name** $r;H$C$F8GM-$NL>A0$r3NJ]$7$F$/$@$5$$!#

## Svga

8E$$(legacy) =PNO7A<0$G$9!#**svga** %I%i%$%P$O SVGA %0%i%U%#%C%/$N PC $r%5%]!<%H$7$^$9!#$3$l$O DJGPP $G%3%s%Q%$%k$5$l$?>l9g$N$_;H$&$3$H$,$G$-$^$9!#

=q<0:

```
     set terminal svga {"<fontname>"}
```

## Tek40

$3$N%I%i%$%P72$O VT-%i%$%/$JC<Kv$N$$$/$D$+$r%5%]!<%H$7$^$9!#**tek40xx** $O Tektronix 4010 $H$=$NB>$[$H$s$I$N TEK %(%_%e%l!<%?$r%5%]!<%H$7$^$9!#**vttek** $O VT-%i%$%/$J tek40xx C<Kv% (%_%e%l!<%?$r%5%]!<%H$7$^$9!#0J2<$N$b$N$O!"gnuplot $N%3%s%Q%$%k;~$KA*Br$5$l$?$b$N$N$_$,MxMQ$G$-$^$9:**kc-tek40xx** $O%+%i!<$N MS-DOS Kermit Tek4010 %?!<%_%J%k% (%_%e%l!<%?$r!"**km-tek40xx** $O$=$NGr9uHG$r%5%]!<%H$7$^$9!#**selanar** $O Selanar %0%i%U%#%C%/C<Kv$r%5%]!<%H$7$^$9!#**bitgraph** $O BBN Bitgraph C<Kv$r%5%]!<%H$7$^$9!#$$$:$l$b%*%W%7%g%s$O$"$j$^$;$s!#

## Tek410x

**tek410x** %I%i%$%P$O Tektronix 410x, 420x %U%!%_%j!<$r%5%]!<%H$7$F$$$^$9!#%*%W%7%g%s$O$"$j$^$;$s!#

## Texdraw

**texdraw** %I%i%$%P$O LaTeX texdraw 4D6-$r%5%]!<%H$7$^$9!#$=$l$O texdraw %Q%C%1!<%8$N "texdraw.sty" $H "texdraw.tex" $H6&$K;HMQ$5$l$k$3$H$r2>Dj$7$F$$$^$9!#

?t$"$kCf$G!"E@(point) $O!"LaTeX $N%3%^%s%I "\Diamond", "\Box" $J$I$r;H$C$FIA$+$l$^$9!#$3$l$i$N%3%^%s%I$O8=:_$O LaTeX2e $N%3%"$K$OB8:_$;$:latexsym %Q%C%1!<%8$K4^$^$l$F$$$^$9$,!"$3$N%Q%C%1!<%84pK\G[I[$N0lIt$G$"$j!"$h$C$FB?$/$N LaTeX $N%7%9%F%`$N0lIt$K$J$C$F$$$^$9!#$3$N%Q%C%1!<%8$r;H$&$3$H$rK:$l$J$$$G$/$@$5$$!#

%*%W%7%g%s$O$"$j$^$;$s!#

## Tgif

Tgif $O X11 %Y!<%9$N%I%m!<%D!<%k$G$9 — $?$@$7!"$3$l$O GIF $K4X$7$F2?$+$9$k$o$1$G$O$"$j$^$;$s!#

**tgif** %I%i%$%P$O!"%U%)%s%H;XDj!"%U%)%s%H%5%$%:;XDj!"1 %Z!<%8Fb$NJ#?t$N%0%i%UIA2h$r%5%]!<%H$7$F$$$^$9!#<4$NHfN($OJQ99$5$l$^$;$s!#

=q<0:

```
     set terminal tgif {portrait | landscape | default} {<[x,y]>}
                       {monochrome | color}
```

```
                        {{linewidth | lw} <LW>}
                        {solid | dashed}
                        {font "<fontname>{,<fontsize>}"}
```

<[x,y]> $K$O$=$N%Z!<%8Fb$N x J}8~!"y J}8~$N%0%i%U$N?t$r;XDj$7!"**color** $O%+%i!<5!G=$rM-8z$K$7!"**linewidth** $OA4$F$N@~I}$r <LW> G\$7!""<fontname>" $K$OM-8z$J PostScript %U%)%s%HL>!"<fontsize> $O$=$N PostScript %U%)%s%H$NBg$-$5$r;XDj$7$^$9!#**defaults** $OA4$F$N%*%W%7%g%s$NCM$r%G%U%)%k%H$NCM$K%;%C%H$7$^$9!#%G%U%)%k%H$O **portrait**, [1,1], **color**, **linewidth 1.0**, **dashed**, **"Helvetica,18"** $G$9!#

**solid** %*%W%7%g%s$O!"UT=8:n6HCf$K$=$&$G$"$k$h$&$K!"@~$,%+%i!<$G$"$k>l9g$KIaDL;H$o$l$^$9!#%O!<%I%3%T!<$OGr9u$K$J$k$3$H$,B?$$$N$G!"$=$N>l9g$O **dashed** $rA*Br$9$Y$-$G$7$g$&!#

B?=EIA2h (multiplot) $O 2 <oN`$NJ}K!$G<BAu$5$l$F$$$^$9!#

$=$N0l$D$O!"I8=`E*$J gnuplot $NB?=EIA2h$N$d$jJ}$G$9:

```
     set terminal tgif
     set output "file.obj"
     set multiplot
     set origin x01,y01
     set size  xs,ys
     plot ...
          ...
     set origin x02,y02
     plot ...
     unset multiplot
```

$h$j>\$7$$>pJs$K$D$$$F$O!"0J2<;2>H: **set multiplot (p. 150)**!#

$b$&0l$D$NJ}K!$O%I%i%$%P$N [x,y] %*%W%7%g%s$G$9!#$3$NJ}K!$ND9=j$O!"86E@ (origin) $dBg$-$5 (size) $N@_Dj$r$7$J$/$F$bA4$F$N%0%i%U$,<+F0E*$K=L<\$5$lG[CV$5$l$k$3$H$G$9!#%0%i%U$NHf x/y $O!"<+A3$JHf 3/2 ($^$?$O **set size** $G@_Dj$5$l$?$b$N) $,J];}$5$l$^$9!#

N>J}$NB?=EIA2h$N<BAu$,A*Br$5$l$?>l9g!"I8=`E*$J$d$jJ}$NJ}$,A*Br$5$l!"7Y9p$N%a%C%;!<%8$,I=<($5$l$^$9!#

C10lIA2h ($^$?$OI8=`E*$JB?=EIA2h) $NNc:

```
     set terminal tgif                    # %G%U%)%k%H
     set terminal tgif "Times-Roman,24"
     set terminal tgif landscape
     set terminal tgif landscape solid
```

%I%i%$%P$N; }$DB?=EIA2h$N;EAH$_$rMxMQ$9$kNc:

```
     set terminal tgif portrait [2,4]  # =DCV!"x-J}8~$K 2 $D!"y-J}8~
                                       # $K 4 $D$N%0%i%UIA2h
     set terminal tgif [1,2]           # =DCV!"x-J}8~$K 1 $D!"y-J}8~
                                       # $K 2 $D$N%0%i%UIA2h
     set terminal tgif landscape [3,3] # 2#CV!"N>J}$NJ}8~$K 3 $D$N%0
                                       # %i%UIA2h
```

## Tikz

$3$N%I%i%$%P$O!"TeX $N%0%i%U%#%C%/%^%/%m$N TikZ %Q%C%1!<%8$H$H$b$K;HMQ$9$k=PNO$r@8@.$7$^$9!#8=:_$O!"30It lua script $K$h$C$F<BAu$5$l$F$$$F!"**set term tikz** $O **set term lua tikz** $N>JN,7A$G$9!#>\:Y$O0J2<;2>H: **term lua (p. 230)**!#=PNO7A<0$N%*%W%7%g%s$rI=<($5$;$k$K$O!"**set term tikz help** $r;HMQ$7$F$/$@$5$$!#

## Tkcanvas

$3$N%I%i%$%P$O!"0J2<$N%9%/%j%W%H8@8l$N$&$A$N0l$D$N Tk canvas widget %3%^%s%I$r@8@.$7$^$9: Tcl (%G%U%)%k%H), Perl, Python, Ruby, REXX!#

=q<0:

```
set terminal tkcanvas {tcl | perl | perltkx | python | ruby | rexx}
                      {standalone | input}
                      {interactive}
                      {rounded | butt}
                      {nobackground | background <rgb color>}
                      {{no}rottext}
                      {size <width>,<height>}
                      {{no}enhanced}
                      {externalimages | pixels}
```

7k2L$rI=<($9$k$K$O!"0J2<$N Tcl/Tk %3%^%s%INs$r<B9T$7$^$9:

```
package require Tk
# 0J2<$N 2 9T$O!"30It2hA|$r;HMQ$9$k>l9g$K$N$_I,MW
package require img::png
source resize.tcl
source plot.tcl
canvas .c -width 800 -height 600
pack .c
gnuplot .c
```

Perl/Tk $N>l9g$O!"0J2<$N$h$&$K$7$^$9:

```
use Tk;
my $top = MainWindow->new;
my $c = $top->Canvas(-width => 800, -height => 600)->pack;
my $gnuplot = do "plot.pl";
$gnuplot->($c);
MainLoop;
```

Perl/Tkx $N>l9g$O!"0J2<$N$h$&$K$7$^$9:

```
use Tkx;
my $top = Tkx::widget->new(".");
my $c = $top->new_tk__canvas(-width => 800, -height => 600);
$c->g_pack;
my $gnuplot = do "plot.pl";
$gnuplot->($c);
Tkx::MainLoop();
```

Python/Tkinter $N>l9g$O!"0J2<$N$h$&$K$7$^$9:

```
from tkinter import *
from tkinter import font
root = Tk()
c = Canvas(root, width=800, height=600)
c.pack()
exec(open('plot.py').read())
gnuplot(c)
root.mainloop()
```

Ruby/Tk $N>l9g$O!"0J2<$N$h$&$K$7$^$9:

```
require 'tk'
root = TkRoot.new { title 'Ruby/Tk' }
c = TkCanvas.new(root, 'width'=>800, 'height'=>600) { pack  { } }
load('plot.rb')
gnuplot(c)
Tk.mainloop
```

Rexx/Tk $N>l9g$O!"0J2<$N$h$&$K$7$^$9:

```
/**/
call RxFuncAdd 'TkLoadFuncs', 'rexxtk', 'TkLoadFuncs'
call TkLoadFuncs
cv = TkCanvas('.c', '-width', 800, '-height', 600)
call TkPack cv
call 'plot.rex' cv
do forever
    cmd = TkWait()
    if cmd = 'AWinClose' then leave
    interpret 'call' cmd
end
```

**gnuplot** $,@8@.$9$k%3!<%I(>e$NNc$G$O!""plot.<ext>" $H$7$F=q$-=P$5$l$F$$$k$b$N$G$9) $O!"0J2<$N$h$&$J<jB3$-4X?t$r4^$s$G$$$^$9:

gnuplot(canvas)

0z?t$H$7$F canvas $NL>A0$r<h$j$^$9!#
$3$l$r8F$S=P$9$H!"$=$N canvas $r%/%j%"$7!"canvas $N%5%$%:$rC5$7!"$=$NCf$K%0%i%U$rIA$-!"$=$l$K9g$&$h$&$K?-=L$7$^$9!#

gnuplot_plotarea()

canvas %9%/%j!<%s:BI8$G$NIA2hNN0h$N6-3& (xleft, xright, ytop, ybot) $r4^$`%j%9%H$rJV$7$^$9!#
2 <!85%0%i%UIA2h ('plot') $KBP$7$F$N$_F0:n$7$^$9!#

gnuplot_axisranges()

%0%i%U:BI8$G$N 2 $D$N<4$NHO0O (x1min, x1max, y1min, y1max, x2min, x2max, y2min, y2max) $rJV$7$^$9!#
2 <!85%0%i%UIA2h ('plot') $KBP$7$F$N$_F0:n$7$^$9!#

%*%W%7%g%s **standalone** $r;H$($P!"<+8J407k$7$?:G>.%9%/%j%W%H$r@8@.$G$-$^$9!#%G%U%)%k%H$O **input** $G!"$3$l$O<h$j9~$^$l$k$Y$-%9%/%j%W%H$r:n$j$^$9($9$J$o$A!"load $5$l$k$+ call $5$l$k$+!"$^$?$OA*Br$7$?8@8lMQ$N$J$s$i$+$NE,@Z$JJ}K!$G)!#

%*%W%7%g%s **interactive** $r;XDj$9$k$H!"0l$D$N@~J,>e$G%^%&%9%/%j%C%/$7$?$H$-$K$=$NCfE@$N:BI8$,I8=`=PNO$K=PNO$5$l$k$h$&$K$J$j$^$9!#$3$NF0:n$O!"user_gnuplot_coordinates $H$$$&<jB3$-4X?t$rDj5A$9$k$3$H$G!"UL$J$b$N$KCV$-49$($k$3$H$b2DG=$G$9!#$=$N<jB3$-4X?t$K$O0J2<$N0z?t$,EO$5$l$^$9:

```
win id x1s y1s x2s y2s x1e y1e x2e y2e x1m y1m x2m y2m,
```

$3$l$i$O!"canvas $NL>A0!"@~J,$N id!"2 $D$N:BI87O$G$N$=$N@~J,$N3+;OE@$N:BI8!"=*N;E@$N:BI8!"CfE@$N:BI8$G$9!#CfE@$N:BI8$O!"BP?t<4$KBP$7$F$N$_M?$($i$l$^$9

%G%U%)%k%H$G$O!"canvas $O **transparent** $G$9$,!"%*%W%7%g%s **background** $G!"L@<(E*$KGX7J?'$r@_Dj$9$k$3$H$b$G$-$^$9!#

**rounded** $O!"@~$NC<$d@\9gIt$r4]$/$7$^$9!#%G%U%)%k%H$N **butt** $O!"@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9!#

%*%W%7%g%s **rottext** $G!"J8;zNs$NG$0U3Q$G$N2sE>$rM-8z$K$G$-$^$9$,!"$=$l$K$O Tcl/Tk 8.6 0J9_$,I,MW$G$9!#%G%U%)%k%H$O **norottext** $G$9!#

%*%W%7%g%s **size** $O!"L\@9$j$N9o$_$H%U%)%s%H%5%$%:$r!";XDj$5$l$? canvas %5%$%:$KBP$7$F:GE,2=$J$b$N$K$7$h$&$H$7$^$9!#%G%U%)%k%H$G$O!"=PNO%5%$%:$O 800 x 600 %T%/%;%k$H$7$F$$$^$9!#

**enhanced** $O!"3HD%J8;zNs=hM}$rA*Br$7$^$9(%G%U%)%k%H) $,!"$3$l$O:#$N$H$3$m Tcl $G$N$_MxMQ2DG=$G$9!#

%*%W%7%g%s **pixels** (%G%U%)%k%H) $O!"%U%'!<%k%;!<%U$J%T%/%;%kKh$N2hA|=hM}%k!<%A%s$rA*Br$7$^$9!#0J2<;2>H: **image pixels (p. 63)**!#%*%W%7%g%s **externalimages** $O!"2hA|$r30It PNG 2hA|$H$7$FJ]B8$7!"$=$l$r$"$H$G tkcanvas %3!<%I$,FI$_9~$s$G?-=L$7$^$9!#$3$N%*%W%7%g%s$O!"Tcl $G$N$_M-8z$G!"$7$+$b Tk $N2hA|=hM}%k!<%A%s$,G$0U$N?-=L$rDs6!$7$F$$$J$$$?$a$K!"$"$k>u67$G$OCY$/$J$j$^$9!#$3$N>l9g!"%9%/%j%W%H$G!"Ds6!$5$l$k rescale.tcl $r<h$j9~$^$J$1$l$P$$$1$^$;$s!#

BPOC7?%b!<%I$O!"Python/Tk, Rexx/Tk $G$O$^$@<BAu$5$l$F$$$^$;$s!#Ryby/Tk $NBPOC7?%b!<%I$O!"$^$@ user_gnuplot_coordinates $r%5%]!<%H$7$F$$$^$;$s!#

## Tpic

**tpic** %I%i%$%P$O tpic \special $G$N LaTeX picture 4D6-$NIA2h$r%5%]!<%H$7$^$9!# $3$l$O **latex** $d **eepic** %I%i%$%P$KBe$o$kJL$JA*Br;h$G$9!#E@$NBg$-$5 (pointsize)!"@~$NI} (linewidth)!"E@@~$NE@$N4V3V (interval) $K4X$9$k%*%W%7%g%s$,$"$j$^$9!#

=q<0:

```
     set terminal tpic <pointsize> <linewidth> <interval>
```

**pointsize** $H **linewidth** $O@0?t$G%_%j%$%s%AC10L!"**interval** $O<B?t$GC10L$O%$%s%A$G$9!#@5$G$J$$CM$r;XDj$9$k$H%G%U%)%k%H$NCM$,;H$o$l$^$9!#%G%U%)%k%H$G$O pointsize = 40, linewidth = 6, interval = 0.1 $G$9!#

LaTeX $K4X$9$kA4$F$N%I%i%$%P$OJ8;zNs$NG[CV$N@)8f$KFCJL$JJ}K!$rDs6!$7$^$9: '{' $G;O$^$kJ8;zNs$O!"'}' $GJD$8$kI,MW$,$"$j$^$9$,!"$=$NJ8;zNsA4BN$, LaTeX $K$h$C$F?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0$5$l$^$9!#'[' $G;O$^$kJ8;zNs$N>l9g$O!"0LCV$N;XDj$r$9$kJ8;zNs (t,b,l,r $N$&$A2 $D$^$G) $,B3$-!"<!$K ']{'!"J8;zNsK\BN!"$G:G8e$K '}' $H$7$^$9$,!"$3$NJ8;zNs$O LaTeX $, LR-box $H$7$F@07A$7$^$9!#\rule{}{} $r;H$($P$5$i$KNI$$0LCV9g$o$;$,2DG=$G$7$g$&!#

Nc: 8+=P$7$N0LCV9g$o$;$K4X$7$F: gnuplot $N%G%U%)%k%H (BgDq$=$l$J$j$K$J$k$,!"$=$&$G$J$$$3$H$b$"$k):

```
      set title '\LaTeX\ -- $ \gamma $'
```

?eJ?J}8~$K$b?bD>J}8~$K$b%;%s%?%j%s%0:

```
      set label '{\LaTeX\ -- $ \gamma $}' at 0,0
```

0LCV$rL@<(E*$K;XDj (>e$K9g$o$;$k):

```
      set xlabel '[t]{\LaTeX\ -- $ \gamma $}'
```

B>$N8+=P$7 − L\@9$j$ND9$$8+=P$7$KBP$9$k8+@Q$j:

```
      set ylabel '[r]{\LaTeX\ -- $ \gamma $\rule{7mm}{0pt}}'
```

## Vgagl

%I%i%$%P **vgagl** $O%^%&%9$H pm3d $r4 0A4$K%5%]!<%H$7$?!"linux $N9bB.$J%3%s%=!<%k%I%i%$%P$G$9!#%G%U%)%k%H%b!<%I$N@_Dj$K$O 4D6-JQ?t SVGALIB_DEFAULT_MODE $r;2>H$7$^$9$,!"@_Dj$5$l$F$$$J$$>l9g$O 256 ?'%b!<%I$GM-8z$J2rA|EY$N$&$A:G$b9b$$$b$N$rA*Br$7$^$9!#

=q<0:

```
  set terminal vgagl \
               background [red] [[green] [blue]] \
               [uniform | interpolate] \
               [mode]
```

%+%i!<%b!<%I$O mode %*%W%7%g%s$GM?$($k$3$H$b$G$-$^$9!#G1024x768x256 $N$h$&$J5-9fE*L>>N$d@0?t$GM?$($k$3$H$,$G$-$^$9!#%*%W%7%g%s **background** $O [0, 255] $NHO0O$N@0?t 1 $D!"$^$?$O 3 $D$NAH$r<h$j$^$9!#@0?t 1 $D$N>l9g$O$=$l$OGX7J$N3%?'$NCM$H8+$J$5$l!"3 $D$NAH$N>l9g$O$=$l$KBP1~$7$??'$,GX7J$K<h$i$l$^$9!#Aj8_$KGSB>E*$J%*%W%7%g%s **interpolate** $H **uniform** $O!";03Q7A$NEI$j$D$V$7$N:]$K?'$NJd4V$,9T$&$+$I$&$+ (%G%U%)%k%H$G$O ON) $r@)8f$7$^$9!#

9b2rA|EY%b!<%I$rF@$k$K$O!"B?J, libvga $N@_Dj%U%!%$%k (DL>o/etc/vga/libvga.conf) $r=$@5$9$kI,MW$,$"$k$G$7$g$&!#VESA fb $r;H$&$N$ONI$$A*Br$G$9$,!"$=$l$O%+!<%M%k$N%3%s%Q%$%k$,I,MW$G$9!#

vgagl %I%i%$%P$O!"0J2<$N%j%9%H$N$&$A$N *M-8z$J* vga %b!<%I$N:G=i$N$b$N$r;HMQ$7$^$9!#

```
- vgagl $N@_Dj;~$KM?$($i$l$k%b!<%I!"Nc$($P 'set term vgagl G1024x768x256'
  $O:G=i$K G1024x768x256 %b!<%I$,M-8z$+$I$&$+%A%'%C%/$7$^$9!#
- 4D6-JQ?t SVGALIB_DEFAULT_MODE
- G1024x768x256
- G800x600x256
- G640x480x256
- G320x200x256
- G1280x1024x256
- G1152x864x256
- G1360x768x256
- G1600x1200x256
```

## VWS

Cm0U: 8E$$ (legacy) =PNO7A<0$G$9! #**VWS** %I%i%$%P$O VAX %&%#%s%I%&%7%9%F%`$r%5%]!<%H$7$^$9! #%*%W%7%g%s$O$"$j$^$;$s! #$3$N%I%i%$%P$O%G%#%9%W%l%$$N>uBV (Gr9u$+! "%0%l%$%9%1!<%k$+%+%i!<$+) $r<+F08!CN$7$^$9! #A4$F$N@~<o$O<B@~$GIA2h$5$l$^$9! #

## Windows

=PNO7A<0 **windows** $O! "%0%i%UIA2h$HJ8;zNsIA2h$K Windows GDI $r;HMQ$9$k9bB.$JBPOC7?=PNO%I%i%$%P$G$9! #Windows $G$O! "J#?t$N4D6-$GF0:n$9$k **wxt** =PNO7A<0! "**qt** =PNO7A<0$b%5%]!<%H$5$l$F$$$^$9! #

=q<0:

```
set terminal windows {<n>}
                     {color | monochrome}
                     {solid | dashed}
                     {rounded | butt}
                     {enhanced | noenhanced}
                     {font <fontspec>}
                     {fontscale <scale>}
                     {linewdith <scale>}
                     {pointscale <scale>}
                     {background <rgb color>}
                     {title "Plot Window Title"}
                     {size <width>,<height>}
                     {position <x>,<y>}
                     {docked {layout <rows>,<cols>} | standalone}
                     {close}
```

J#?t$N%&%#%s%I%&IA2h$,%5%]!<%H$5$l$F$$$^$9: **set terminal win <n>** $G=PNO$,HV9f n $NIA2h%&%#%s%I%&$KAw$i$l$^$9! #

**color**, **monochrome** $O! "%+%i!<=PNO$+Gr9u=PNO$+$NA*Br$G! "**dashed** $H **solid** $O! "E@@~$H<B@~$NA*Br$G$9! #**color** $G$O **solid** $,%G%U%)%k%H$G! "**monochrome** $G$O **dashed** $,%G%U%)%k%H$G$9! #**rounded** $O! "@~$NC<$d@\9gIt$r4]$/$7! "%G%U%)%k%H$N **butt** $O@m$C$?C<$H3QD%$C$?@\9gIt$r;HMQ$7$^$9! #**enhanced** $O3HD%J8;zNs=hM} (enhanced text mode) $N5!G=(>eIU! "2<IUJ8;z$d%U%)%s%H$N:.:_) $rM-8z$K$7$^$9! #>\:Y$O0J2<;2>H: **enhanced text (p. 27)**! #**<fontspec>** $O "<fontface>,<fontsize>" $N7A<0$G! ""<fontface>" $OM-8z$J Windows $N%U%)%s%HL>$G! "**<fontsize>** $O%]%$%s%HC10L$G$N%U%)%s%H$NBg$-$5$G$9! #$3$NN>MWAG$O$$$:$l$b>JN,2DG=$G$9! #0JA0$NHG$N gnuplot $G$O! "**font** %-!<%o!<%I$O>JN,2DG=$G! "<fontsize> $O0zMQId$J$7$N?tCM$GM?$($k$3$H$,$G$-$^$7$?$,! "8=:_$O$=$N7A<0$O%5%]!<%H$7$F$$$^$;$s$N$GCm0U$7$F$/$@$5$$! #**linewidth**, **fontscale**, **pointscale** $G! "@~$NI}! "J8;z%5%$%:! "E@5-9f$NBg$-$5$r?-=L$G$-$^$9! #**title** $O! "%0%i%U%&%#%s%I%&$N%?%$%H%k$rJQ99$7$^$9! #**size** $O%&%#%s%I%&Fb$NIA2hNN0h$N%T%/%;%kC10L$G$NI}$H9b$5$r! "**wsize** $O%&%#%s%I%&<+?H$N<B:]$N%5%$%:$r! "**position** $O%&%#%s%I%&$N86E@! "$9$J$o$A:8>e3Q$N%9%/%j!<%s>e$N%T%/%;%kC10L$G$N0LCV$rDj5A$7$^$9! #$3$l$i$N%*%W%7%g%s$O! "%U%!%$%k **wgnuplot.ini** $N%G%U%)%k%H$N@_Dj$r>e=q$-$7$^$9! #

**docked** $O! "%0%i%U%&%#%s%I%&$r! "wgnuplot $N%F%-%9%H%&%#%s%I%&$NCf$KKd$a9~$_! "**size** $H **position** $N%*%W%7%g%s$rL5;k$7$^$9! #**docked** $O! "%3%s%=!<%kHG$N gnuplot $G$OMxMQ$G$-$J$$$3$H$KCm0U$7$F$/$@$5$$! #$3$N%*%W%7%g%s$r@_Dj$9$k$H! "?75,$N%&%#%s%I%&$KBP$7$F%G%U%)%k%H$NCM$rJQ99$7$^$9! #:G=i$N%G%U%)%k%H$O! "**standalone** $G$9! #%I%C%-%s%0%b!<%I$G$O! "%0%i%U$N:G>.Ns?t! "9T?t$ODI2C%*%W%7%g%s **layout** $GJ];}$G$-$^$9! #;XDj$5$l$?%l%$%"%&%H0J>e$K%0%i%U$,$"$k>l9g$O! "9T$rDI2C$7$^$9! #J#?t$N%0%i%U$O! "?tCM ID $G%=!<%H$7! "9TJ}8~$KKd$a$F$$$-$^$9! #

B>$N%*%W%7%g%s$b%0%i%U%a%K%e!<$d=i4|2=%U%!%$%k **wgnuplot.ini** $GJQ99$G$-$^$9! #

Windows HG$O! "HsBPOC7?%b!<%I$G$ODL>o! "%3%^%s%I%i%$%s$+$iM?$($?%U%!%$%k$N:G8e$KC#$9$k$HD>$A$K=*N;$7$^$9$,! "%3%^%s%I%i%$%s$N:G8e$K- $r;XDj$7$?>l9g$OJL$G$9! #$^$?! "$3$N%b!<%I$G$O%F%-%9%H%&%#%s%I%&$OI=<($;$:! "%0%i%U$N$_$NI=<($H$J$j$^$9$,! "%*%W%7%g%s$H$7$F **-persist** (x11 HG$N gnuplot $HF1$8%*%W%7%g%s; =>Mh$N Windows $N$_$N%*%W%7%g%s **/noend** $d **-noend** $r;H$&$3$H$b$G$-$^$9) $r;XDj$9$k$H gnuplot $O=*N;$7$J$/$J$j$^$9! #$3$N>l9gB>$N OS $G$N gnuplot $N5sF0$H$O0[$J$j! "-persist %*%W%7%g%s8e$b gnuplot $NBPOC7?%3%^%s%I%i%$%s$r<u$1IU$1$^$9! #

%3%^%s%I **set term** $G gnuplot $N=PNO7A<0$rJQ9 9$7$?>19g! "IA2h%&#%s%I%&$O$=$N$^$^;D$j$^$9$,! "**set term windows close** $GIA2h%&#%s%I%&$rJD$8$k$3$H$,$G$-$^$9! #

**gnuplot** $O! "Windows >e$G$N=PNO$N@8@.$N$?$a$N$$/$D$+$NJ}K!$r%5%]!<%H$7$F$$$^$9! #0J2<;2>H: **windows printing (p. 256)**! #windows =PNO7A<0$O! "%/%j%C%W%\!<%I$d EMF %U%!%$%k$rDL$7$FB>$N%W%m%0%i%`$H$N%G!<%?$N8r49$r%5%]!<%H$7$F$$$^$9! #0J2<;2>H: **graph-menu (p. 256)**! #EMF %U%!%$%k$r@8@.$9$k$K$O! "**emf** =PNO7A<0$r;H$&$3$H$b$G$-$^$9! #

## %0%i%U%a%K%e!< (graph-menu)

**gnuplot graph** %&#%s%I%&$G%^%&%9$N1&%\%?%s(*) $r2!$9$+! "%7%9%F%`%a%K%e!<$d%D!<%k%P!<$+$i **Options** $rA*Br$9$k$H0J2<$N%*%W%7%g%s$r; }$D%]%C%W%"%C%W%a%K%e!<$,8=$o$1$^$9:

**Copy to Clipboard** %/%j%C%W%\!<%I$K%S%C%H%^%C%W$d EMF 2hA|$r%3%T!<

**Save as EMF...** 8=:_$N%0%i%U%&#%s%I%&$r%a%?%U%!%$%k (EMF $+ EMF+) $H$7$FJ]B8

**Save as Bitmap...** 8=:_$N%0%i%U$r%S%C%H%^%C%W%U%!%$%k$H$7$FJ]B8

**Print...** %0%i%U%#%C%/%&#%s%I%&$r Windows %W%j%s%?%I%i%$%P$G%W%j%s%H%"%&%H! #%W%j%s%?$H3HBgN($NA*Br$,2DG=! #0J2<$b;2>H: **windows printing (p. 256)**! #

**Bring to Top** %A%`%C%/$rF~$1$k$H%0%i%U%&#%s%I%&$rB>$NA4$F$NIA2h%&#%s%I%&$N<jA0$KI=<(

**Color** %A%`%C%/$rF~$1$k$H%+%i!<=PNO$,M-8z! "%A%`%C%/L5$7$@$H$9$Y$F3%?'3,D4I=<(! #$3$1$ONc$($PGr9u$N%W%j%s%H%"%&%H$N8+$?L\$N3NG'$KM-MQ$G$9! #

**GDI backend** Windows GDI $r;H$&%9%/%j!<%sIA2h! #$3$1$O8EE5E*$J windows =PNO7A<0$NJ}K!$G! "9bB.$G$9$,! "%"%s%A%(%$%j%"%9! "%*!<%P!<%5%s%W%j%s%0! "40A4$JF)2a5!G=$J$I$NB?$/$N5!G=$r; }$C$F$$$^$;$s! #8=:_$OHs?d>)$G$9! #

**GDI+ backend** GDI+ Windows API $r;H$&%9%/%j!<%sIA2h! #$3$1$O! "%"%s%A%(%$%j%"%9! "%*!<%P!<%5%s%W%j%s%0! "F)2a! "E@@~/GK@~%Q%?!<%s$N%+%9%?%^%$%:$N$9$Y$F$r40A4$K%5%]!<%H$7$^$9! #8=:_$O$3$1$,0lHVK>$^$7$$$G$9! #

**Direct2D backend** Direct2D $H DirectWrite API $r;HMQ$9$kIA2h! #$3$1$O! "%0%i%U%#%C%/%+!<%I2CB.5!G=$r;HMQ$7! "$h$C$FDL>o$O:G$b9bB.$G$9! #0u:~$dJ]B8! "%/%j%C%W%\!<%I$X$N%3%T!<$K$O GDI+ $r;HMQ$7$^$9! #$3$1$O! "$=$N$&$A$K%G%U%)%k%H$N%P%C%/ (%s%I$H$J$k$G$7$g$&$,! "8=:_$O$^$@;n83CJ3,$G$9! #

**Oversampling** $3$1$K$h$j! "BP3Q@~$OHs@0?t$N%T%/%;%k0LCV$KIA2h$5$1! ":81&$K$U$i$D$/$3$H$,Hr$1$i$1$^$9! #$7$+$71tD>@~! "?eJ?@~$O! "$\$d$1$?@~$K$J$i$J$$$h$&@0?t$N%T%/%;%k0LCV$KCV$+$1$^$9! #

**Antialiasing** @^$1@~$d@~$NC<$NJ?3j2=$r2DG=$K$7$^$9! #$3$1$OIA2h$rn/$/$9$k$3$H$KCm0U$7$F$/$@$5$$! #**Antialiasing of polygons** B?3Q7AIA2h$N%"%s%A%(%$%j%"%9$O! "%G%U%)%k%H$G$OM-8z$G$9$,! "GDI+ $N%P%C%/(%s%I$G$OIA2h$rCY$/$9$k2DG=@-$,$"$j$^$9! #

**Fast rotation** %0%i%U%&#%s%I%&$r%^%&%9$G2sE>$7$F$$$k: ]$K%"%s%A%(%$%j%"%9$r0l;~E*$K%*%U$K$7$^$9! #$3$1$O! "%^%&%9%\%?%s$rN%$7$?8e$KD I2C$N:FIA2h$,9T$o$1$^$9$,! "A jEv$KIA2h$rAa$/$7$F$/$1$^$9! #

**Background...** %&#%s%I%&GX7J?'$N@_Dj

**Choose Font...** %0%i%U%#%C%/%&#%s%I%&$G;H$&%U%)%s%H$NA*Br

**Update wgnuplot.ini** 8=:_$N%&#%s%I%&$N0LCV! "%&#%s%I%&$NBg$-$5! "%F%-%9%H%&#%s%I%&$N%U%)%s%H$H$=$N%U%)%s%H%5%$%:! "%0%i%U%&#%s%I%&$N%U%)%s%H$H$=$N%U%)%s%H%5%$%:! "GX7J?'$r=i4|2=%U%!%$%k **wgnuplot.ini** $KJ]B8

(*) $3$N%a%K%e!<$O! "**unset mouse** $K$h$C$F1&%^%&%9%\%?%s2!$7$7$+;H$($J$/$J$k$N$GCm0U! #

## 0u:~ (printing)

9%$_$K$h$j! "%0%i%U$O0J2<$N$h$&$JJ}K!$G0u:~$G$-$^$9! #

1. **gnuplot** $N%3%^%s%I **set terminal** $G%W%j%s%?$rA*Br$7! "**set output** $G=PNO$r%U%!%$%k$K%j%@%$%l%/%H

2. **gnuplot graph** %&#%s%I%&$+$i **Print...** %3%^%s%I$rA*Br! #%F%-%9%H%&#%s%I%&$+$i$3$1$r9T$J$&$FCJL$J%3%^%s%I **screendump** $b$"$k! #

**3. set output "PRN"** $H$9$k$H=PNO$O0l;~%U%!%$%k$K=PNO$5$l!"**gnuplot** $r=*N;$9$k$+$^$?$O **set output** %3%^%s%I$G=PNO$rB>$N$b$N$XJQ99$9$k$H!"%@%$%"%m%0 (BPOC) %\%C%/%9$,8=$o$l!"$=$3$G%W%j%s%?%]!<%H$rA*Br!#$=$3$G OK $rA*Br$9$k$H!"=PNO$O%W%j%s%H%^%M!<%8%c$G$O2C9)$5$l$:$K$=$N$^$^A*Br$5$l$?%]!<%H$G%W%j%s%H%"%&%H$5$l$k!#$3$l$O6vA3 ($^$?$O8N0U) $K!"$"$k%W%j%s%?MQ$N=PNO$r!"$=$l$KBP1~$7$F$$$J$$%W%j%s%?$KAw$jF@$k$3$H$r0UL#$9$k!#

### %F%-%9%H%a%K%e!< (text-menu)

**gnuplot text** %&%#%s%I%&$G%^%&%9$N1&%\%?%s$r2!$9$+!"%7%9%F%`%a%K%e!<$+$i **Options** $rA*Br$9$k$H0J2<$N%*%W%7%g%s$r;}$D%]%C%W%"%C%W%a%K%e!<$,8=$o$l$^$9:

**Copy to Clipboard** %^!<%/$7$?%F%-%9%H$r%/%j%C%W%\!<%I$K%3%T!<

**Paste** BG$A9~$s$@$N$HF1$8$h$&$K%/%j%C%W%\!<%I$+$i%F%-%9%H$r%3%T!<

**Choose Font...** %F%-%9%H%&%#%s%I%&$G;H$&%U%)%s%H$NA*Br

**System Colors** A*Br$9$k$H%3%s%H%m!<%k%Q%M%k$G@_Dj$7$?%7%9%F%`%+%i!<$r%F%-%9%H%&%#%s%I%&$KM?$($k!#A*Br$7$J$1$l$PGrGX7J$GJ8;z$O9u$+@D!#

**Wrap long lines** A*Br$9$k$H8=:_$N%&%#%s%I%&I}$h$j$bD9$$9T$r@^$jJV$9

**Update wgnuplot.ini** 8=:_$N@_Dj$r!"%f!<%6$N%"%W%j%1!<%7%g%s%G!<%?%G%#%l%/%H%j$K$"$k=i4|2=%U%!%$%k **wgnuplot.ini** $KJ]B8

### %a%K%e!<%U%!%$%k wgnuplot.mnu

%a%K%e!<%U%!%$%k **wgnuplot.mnu** $, **gnuplot** $HF1$8%G%#%l%/%H%j$K$"$k>l9g!"**wgnuplot.mnu** $K=q$+$l$F$$$k%a%K%e!<$,FI$_9~$^$l$^$9!#%a%K%e!<%3%^%s%I$O0J2<$NDL$j:

| | |
|---|---|
| [Menu] | <!$N9T$NL>A0$G?7$7$$%a%K%e!<$r3+;O |
| [EndMenu] | 8=:_$N%a%K%e!<$r=*N; |
| [--] | ?eJ?$J%a%K%e!<$N;E@Z$j$rF~$l$k |
| [\|] | ?bD>$J%a%K%e!<$N;E@Z$j$rF~$l$k |
| [Button] | %a%K%e!<$K2!$7%\%?%s$rF~$l!"$=$l$K<!$N%^%/%m$r3d$jEv$F$k |

%^%/%m$O2 9T$G=q$-!":G=i$N9T$O%^%/%mL>(%a%K%e!<$N8+=P$7)!"2 9TL\$,%^%/%mK\BN$G$9!#@hF,$N6uGrNs$OL5;k$5$l$^$9!#%^%/%m%3%^%s%I$O0J2<$NDL$j:

[INPUT] [EOS] $+ {ENTER} $^$G$r%W%m%s%W%H$H$7$F=PNO$7J8;zNs$rF~NO [EOS] J8;zNs$N=*$j (End Of String)!#2?$b=PNO$7$J$$[OPEN] 3+$/%U%!%$%kL>$r<hF@!#:G=i$N [EOS] $^$G$,BPOC%&%#%s%I%&$N%?
%$%H%k!"$=$3$+$i<!$N `[EOS]` $+ `{ENTER}` $^$G$,%G%U%)%k%H$N%U
%!%$%kL>

[SAVE] %;!<%V%U%!%$%kL>$r<hF@ ([OPEN] F1MM) [DIRECTORY] %G%#%l%/%H%jL>$r<hF@!#[EOS] $+ {ENTER} $^$G$,BPOC%&%#%s%I%&
$N%?%$%H%k

%^%/%mJ8;z$NCV$-49$($O0J2<$NDL$j:

| | |
|---|---|
| {ENTER} | I\|5" '\r' |
| {TAB} | %?%V '\011' |
| {ESC} | %(%9%1!<%W '\033' |
| {^A} | '\001' |
| ... | |
| {^_} | '\031' |

%^%/%m$OE83+8e$NJ8;z?t$,:GBg 256 J8;z$K@)8B$5$l$F$$$^$9!#

### Wgnuplot.ini

Windows %F%-%9%H%&%#%s%I%&$H **windows** =PNO7A<0$O!"%*%W%7%g%s$N$$/$D$+ **wgnuplot.ini** $N **[WGNUPLOT]** %;%/%7%g%s$+$iFI$_9~$_$^$9!#$3$N%U%!%$%k$O!"%f!<%6$N%"%W%j%1!<%7%g%s%G!<%?%G%#%l%/%H%j$KCV$-$^$9!#**wgnuplot.ini** %U%!%$%k$N%5%s%W%k:

```
[WGNUPLOT]
TextOrigin=0 0
TextSize=640 150
TextFont=Consolas,9
TextWrap=1
TextLines=400
TextMaximized=0
SysColors=0
GraphOrigin=0 150
GraphSize=640 330
GraphFont=Tahoma,10
GraphColor=1
GraphToTop=1
GraphGDI+=1
GraphD2D=0
GraphGDI+Oversampling=1
GraphAntialiasing=1
GraphPolygonAA=1
GraphFastRotation=1
GraphBackground=255 255 255
DockVerticalTextFrac=350
DockHorizontalTextFrac=400
```

0J2<$N@_Dj$O wgnuplot $N%F%-%9%H%&%#%s%I%&$N$_$KE,MQ$5$l$^$9!#

**TextOrigin** $H **TextSize** $O!"%F%-%9%H%&%#%s%I%&$N0LCV$H%5%$%:$N;XDj$G$9!#**TextMaximized** $, 0 $G$J$$>l9g!"%&%#%s%I%&$O:GBg2=$5$l$^$9!#

**TextFont** $O!"%F%-%9%H%&%#%s%I%&$N%U%)%s%H$H%5%$%:$N;XDj$G$9!#

**TextWrap** $O!"D9$$%F%-%9%H9T$N@^$jJV$7$rA*Br$7$^$9!#

**TextLines** $O!"%F%-%9%H%&%#%s%I%&$NFbIt%P%C%U%!$K2?9T(@^$jJV$7$J$7)J];}$9$k$+$r;XDj$7$^$9!#8=:_$O!"$3$NCM$r wgnuplot Fb$+$i$OJQ99$G$-$^$;$s!#

0J2<;2>H: **text-menu (p. 257)**!#

**DockVerticalTextFrac** $H **DockHorizontalTextFrac** $O!"$=$l$>$l@iJ,N(C10L$G$N!"%F%-%9%H%&%#%s%I%&Fb$K?bD>J}8~!"?eJ?J}8~$K3NJ]$5$l$k3d9g$G$9!#

**GraphFont** $O!"%U%)%s%HL>$H%]%$%s%HC10L$N%U%)%s%H%5%$%:$N;XDj$G$9!#

0J2<;2>H: **graph-menu (p. 256)**!#

## Wxt

**wxt** =PNO7A<0$O!"8D!9$N%&%#%s%I%&$X$N=PNO$r@8@.$7$^$9!#%&%#%s%I%&$O wxWidgets %i%$%V%i%j$G@8@.$5$l$^$9($3$l$, **wxt** $NL>A0$NM3Mh$G$9)!#<B:]$NIA2h$O!"2D %0%i%U%#%C%/%i%$%V%i%j cairo $H!"J8;zNsG[CV/%l%s%@%j%s%0%i%$%V%i%j pango $,=hM}$7$^$9!#

=q<0:

```
      set term wxt {<n>}
                   {size <width>,<height>} {position <x>,<y>}
                   {background <rgb_color>}
                   {{no}enhanced}
                   {font <font>} {fontscale <scale>}
                   {title "title"}
                   {linewidth <lw>}
                   {dashlength <dl>}
                   {{no}persist}
                   {{no}raise}
                   {{no}ctrl}
```

```
                    {close}
```

J#?t$NIA2h%&%#%s%I%&$b%5%]!<%H$7$F$$$F!"**set terminal wxt <n>** $H$9$l$PHV9f n $NIA2h%&%#%s%I%&$X=PNO$7$^$9!#

%G%U%)%k%H$N%&%#%s%I%&%?%$%H%k$O!"$3$N%&%#%s%I%&HV9f$K4p$E$$$F$$$^$9!#$=$N%?%$%H%k$O "title" %-!<%o!<%I$G$b;XDj$G$-$^$9!#

IA2h%&%#%s%I%&$O!"**gnuplot** $N=PNO7A<0$rJL$J$b$N$KJQ99$7$F$b;D$C$?$^$^$K$J$j$^$9!#$=$l$rJD$8$k$K$O!"$=$N%&%#%s%I%&$KF~NO%U%)!<%+%9$,$"$k>uBV$G 'q' $rF~NO$9$k$+!"%&%#%s%I%&%^%M!<%8%c$N%a%K%e!<$G **close** $rA*Br$9$k$+!"**set term wxt <n> close** $H$7$F$/$@$5$$!#

IA2hNN0h$N%5%$%:$O%T%/%;%kC10L$GM?$($^$9!#%G%U%)%k%H$O 640x384 $G$9!#$=$l$K2C$($F!"%&%#%s%I%&$N<B:]$N%5%$%:$K$O!"%D!<%k%P!<$d%9%F!<%?%9%P!<MQ$N%9%Z!<%9$bDI2C$5$l$^$9!#%&%#%s%I%&$N%5%$%:$rJQ99$9$k$H!"IA2h%0%i%U$b%&%#%s%I%&$N?7$7$$%5%$%:$K$T$C$?$j9g$&$h$&$K$9$0$K?-=L$5$l$^$9!#B>$NBPOC7?=PNO7A<0$H0c$$!"**wxt** =PNO7A<0$O%U%)%s%H!"@~I}$b4^$a$FIA2hA4BN$r?-=L$7$^$9$,!"A4BN$N%"%9%Z%/%HHf$O0lDj$KJ]$C$F!"6u$$$?%9%Z!<%9$O3%?'$GEI$jDY$7$^$9!#$=$N8e **replot** $H%?%$%W$9$k$+%?!<%_%J%k%D!<%k%P!<$N **replot** %"%$%3%s$r%/%j%C%/$9$k$+?7$?$K **plot** %3%^%s%I$rF~NO$9$k$H!"$=$N?7$7$$IA2h$G$O4 0A4$K$=$N%&%#%s%I%&$K9g$o$;$i$l$^$9$,!"%U%)%s%H%5%$%:$d@~I}$O$=$l$>$l$N%G%U%)%k%H$K%j%;%C%H$5$l$^$9!#

position %*%W%7%g%s$OIA2h%&%#%s%I%&$N0LCV$r@_Dj$9$k$N$K;H$($^$9!#$3$l$O%3%^%s%I **set term** 8e$N:G=i$NIA2h$K$N$_E,MQ$5$l$^$9!#

8=:_$NIA2h%&%#%s%I%& (**set term wxt <n>** $GA*Br$5$l$?$b$N) $OBPOCE*$G$=$N5sF0$O!"B>$N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **mouse (p. 148)**!#$=$l$K$ODI2C$N%"%$%3%s$b$$$/$D$+$D$$$F$$$^$9$,!"$=$l$i$O$=$l<+BN$,@bL@E*$J$b$N$K$J$C$F$$$k$O$:$G$9!#

$3$N=PNO7A<0$O!"3HD%J8;zNs=hM}%b!<%I (enhanced text mode) $r%5%]!<%H$7$F$$$F!"%U%)%s%H$d=q<0%3%^%s%I (>eIU!"2<IU$J$I) $r%i%Y%k$dB>$NJ8;zNs$KKd$a9~$`$3$H$,$G$-$^$9!#3HD%J8;zNs=hM}%b!<%I$N=q<0$OB>$N gnuplot $N=PNO7A<0$H6&DL$G$9!#>\:Y$O!"0J2<;2>H: **enhanced (p. 27)**!#

<font> $O "FontFace,FontSize" $N7A<0$G!"FontFace $H FontSize $H$r%3%s%^$GJ,N%$7$F0l$D$NJ8;zNs$H$7$F=q$-$^$9!#FontFace $O!"'Arial' $N$h$&$JDL>o$N%U%)%s%HL>$G$9!#FontFace $rM?$($J$$>l9g$O!"wxt =PNO7A<0$O'Sans' $r;HMQ$7$^$9!#FontSize $O!"%]%$%s%HC10L$N%U%)%s%H%5%$%:$G$9!#FontSize $rM?$($J$$>l9g$O!"wxt =PNO7A<0$O 10 %]%$%s%H$r;HMQ$7$^$9!#

Nc:

```
    set term wxt font "Arial,12"
    set term wxt font "Arial" # %U%)%s%HL>$N$_JQ99
    set term wxt font ",12" # %U%)%s%H%5%$%:$N$_JQ99
    set term wxt font "" # %U%)%s%HL>!"%U%)%s%H%5%$%:$r%j%;%C%H
```

%U%)%s%H$ODL>o$N%U%)%s%H%5%V%7%9%F%`$+$i<hF@$7$^$9!#MS-Windows >e$G$O%3%s%H%m!<%k%Q%M%k$N "Fonts" %(%s%H%j$G8!:w$5$l$k$N$G!"$=$3$K@_Dj$7$^$9!#Unix >e$G$O!"%U%)%s%H$O "fontconfig" $,=hM}$7$^$9!#

J8;zNs$N%l%$%"%&%H$K;HMQ$5$l$k pango %i%$%V%i%j$O utf-8 $r4pK\$H$7$F$$$^$9$N$G!"wxt =PNO7A<0$G$O%(%s%3!<%G%#%s%0$r utf-8 $K$9$kI,MW$,$"$j$^$9!#%G%U%)%k%H$NF~NO%(%s%3!<%G%#%s%0$O!"%7%9%F%`$N 'locale' $K$h$j$^$9!#B>$N%(%s%3!<%G%#%s%0$r;HMQ$7$?$$>l9g$O!"$=$l$r gnuplot $KCN$i$;$kI,MW$,$"$j$^$9!#>\:Y$O!"0J2<;2>H: **encoding (p. 128)**!#

pango $O!"unicode %^%C%T%s%0$G$J$$%U%)%s%H$KBP$7$F$OM=4|$;$L7k2L$rM?$($k$+$b$7$l$^$;$s!#Nc$($P Symbol %U%)%s%H$KBP$7$F$O!"wxt =PNO7A<0$O!"J8;z%3!<%I$r unicode $KJQ49$9$k$?$a$K http://www.unicode.org/ $GDs6!$5$l$k%^%C%T%s%0$rMxMQ$7$^$9!#pango $O!"$=$NJ8;z$r4^$`%U%)%s%H$r8+$D$1$k$?$a$K$"$J$?$N Symbol %U%)%s%H$r8!:w$7!"$=$7$F DejaVu %U%)%s%H$N$h$&$K!"I}9-$/ unicode $r%+%P!<$9$kB>$N%U%)%s%H$rC5$9!"$H$$$C$?:GA1$N:n6H$r9T$*$&$H$7$^$9!#$J$*!""the Symbol font" $O!"Acrobat Reader $H0l=o$K"SY______.PFB" $H$7$FG[I[$5$l$F$$$k Adobe Symbol %U%)%s%H$G$"$k$H2r<a$5$l$k$3$H$KCm0U$7$F$/$@$5$$!#$3$NBe$o$j$K!"OpenOffice.org $H0l=o$K"opens___.ttf" $H$7$FG[I[$5$l$k OpenSymbol %U%)%s%H$,F1$8J8;z$rDs6!$7$F$$$^$9!#Microsoft $b Symbol %U%)%s%H ("symbol.ttf") $rG[I[$7$F$$$^$9$,!"$3$l$O0[$J$kJ8;z%;%C%H$K$J$C$F$$$F!"$$$/$D$+$O7g$1$F$$$^$9$7!"$$$/$D$+$O?t<05-9f$KJQ$o$C$F$7$^$C$F$$$^$9!#$"$J$?$N%G%U%)%k%H$N@_Dj$G$J$s$i$+$NLdBj$,5/$-$?>l9g (Nc$($P%G%b%9%/%j%W%H enhancedtext.dem $,$A$c$s$HI=<($5$l$J$$$H$$$C$?>l9g) $O!"Adobe $+ OpenOffice $N Symbol %U%)%s%H$r%$%s%9%H!<%k$7$F!"Microsoft $N Symbol %U%)%s%H$r:o=|$7$F$J$$$H$$1$J$$$+$b$7$l$^$;$s!#"windings" $N$h$&$JB>$NHsI8=`$N%U%)%s%H$G$bF0:n$9$k$3$H$,Js9p$5$l$F$$$^$9!#

IA2h$N%l%s%@%j%s%0$O!"%D!<%k%P!<$GBPOCE*$KJQ99$G$-$^$9!#2DG=$J8B$j:G$bNI$$=PNO$r@8@.$9$k$?$a$K$3$N

%1%s%@%j%s%0$O!"%"%s%A%(%$%j%"%9!"%*!<%P!<%5%s%W%j%s%0!"%R%s%F%#%s%0$N3 $D$N5!9=$r;}$C$F$$$^$9!#%"%s%A%(%$%j%"%9$O!"?eJ?$d?bD>$G$J$$@~$N3j$i$+$JI=<($r2DG=$K$7$^$9!#%*!<%P!<%5%s%W%j%s%0$O!"%"%s%A%(%$%j%"%9$HAH$G%T%/%;%k$h$j$b>.$5$$%5%$%:$G$N@:EY$rDs6!$7!"gnuplot $,Hs@0?t:BI8$ND>@~$r=q$1$k$h$&$K$J$j$^$9!#$3$1$O!"BP3QJ}8~$ND>@~(Nc$($P 'plot x') $,:81&$KMI$1$k$N$rHr$1$^$9!#%R%s%F%#%s%0$O!"%*!<%P!<%5%s%W%j%s%0$K$h$C$F0z$-5/$3$5$1$k?eJ?!"?bD>J}8~$N@~J,$N$\$+$7$rHr$1$^$9!#$3$N=PNO7A<0$O!"$3$1$i$ND>@~$r@0?t:BI8$KB7$(!"$=$1$K$h$j!"1 %T%/%;%kI}$ND>@~$OK\Ev$K1 $D(1 $D$h$jB?$/$b>/$J$/$b$J$$) $N%T%/%;%k$GIA2h$7$^$9!#

%G%U%)%k%H$G$O!"IA2h$,9T$o$1$?$H$-$K%&%#%s%I%&$O%G%9%/%H%C%W$N0lHV>e(:GA0LL) $KI=<($5$1$^$9!#$3$1$O!"%-!<%o!<%I "raise" $G@)8f$G$-$^$9!#%-!<%o!<%I "persist" $O!"$9$Y$F$NIA2h%&%$%s%I%&$rL@<(E*$KJD$8$J$$4V$O!"gnuplot $,=*N;$7$J$$$h$&$K$7$^$9!#:G8e$K!"%G%U%)%k%H$G$O<space> %-!<$Ognuplot %3%s%=!<%k%&%#%s%I%&$r>e$K>e$2!"'q' $OIA2h%&%#%s%I%&$rJD$8$^$9!#%-!<%o!<%I "ctrl" $O!"$=$1$i$N%-!<3d$jEv$F$r!"$=$1$>$1 <ctrl>+<space> $H <ctrl>+'q' $KJQ99$7$^$9!#$3$1$i$N3 $D$N%-!<%o!<%I (raise, persist, ctrl) $O!"@_Dj%@%$%"%m%0>e$N$d$j$H$j$G$b@_Dj$7!"5-21$5$;$k$3$H$,$G$-$^$9!#

## X11

=q<0:

```
  set terminal x11 {<n> | window "<string>"}
                   {title "<string>"}
                   {{no}enhanced} {font <fontspec>}
                   {linewidth LW}
                   {{no}persist} {{no}raise} {{no}ctrlq}
                   {{no}replotonresize}
                   {close}
                   {size XX,YY} {position XX,YY}
  set terminal x11 {reset}
```

J#?t$N%0%i%UIA2h%&%#%s%I%&$r%5%]!<%H$7$F$$$^$9!#**set terminal x11 <n>** $OHV9f n $NIA2h%&%#%s%I%&$K=PNO$7$^$9!#n $,0 $G$J$1$1$P!"%?%$%H%k$,L@<(E*$K;XDj$5$1$F$$$J$1$1$P$=$NHV9f$,%&%#%s%I%&%?%$%H%k$H$7$F$D$1$i$1!"%"%$%3%s$K$O **Gnuplot <n>** $H%i%Y%kIU$1$5$1$^$9!#8=:_M-8z$J%&%#%s%I%&$O%+!<%=%k5-9f$NJQ2=$G6hJL$G$-$^$9(%G%U%)%k%H%+!<%=%k$+$i==;z%+!<%=%k$X)!#

**x11** =PNO7A<0$O!"30It$N%"%W%j%1!<%7%g%s$K$h$C$F@8@.$5$1$F$$$kX $N%&%#%s%I%&$NX ID (16 ?JI=5-) $r%*%W%7%g%s **window** $N8e$KJ8;zNs$H$7$F;XDj$9$k$3$H$G!"$=$N%&%#%s%I%&$H@\B3$G$-$^$9!#X $OJ#?t$N%/%i%$%"%s%H$K%$%Y%s%H ButtonPress $NA*Br$rG'$a$J$$$?$a!"gnuplot $=$N30It%&%#%s%I%&$r%3%s%F%J$H$7$F;HMQ$7$^$9!#$3$NJ}K!$K$h$j!"gnuplot $N%^%&%95!G=$O$H$j$3$^$1$?IA2h%&%#%s%I%&Fb$G$b:nF0$7$^$9!#

```
  set term x11 window "220001e"
```

x11 =PNO7A<0$O!"MxMQ2DG=$J%U%)%s%H$N85$G3HD%J8;zNs=hM}%b!<%I(0J2<;2>H:**enhanced (p. 27)**) $r%5%]!<%H$7$F$$$^$9!#J8;zNs$KKd$a9~$^$1!"MM!9$J8z2L$rM?$($k%U%)%s%H%5%$%:L?Na$N$?$a$K!"%G%U%)%k%H$N x11 %U%)%s%H$,%9%1!<%i%V%k%U%)%s%H$G$"$kI,MW$,$"$j$^$9!#$h$C$F!"0J2<$N:G=i$NNc$O$&$^$/$$$/$G$7$g$&$,!"2 HV L\$N$b$N$O$=$&$G$O$J$$$G$7$g$&!#

```
  set term x11 enhanced font "arial,15"
  set title '{/=20 Big} Medium {/=5 Small}'

  set term x11 enhanced font "terminal-14"
  set title '{/=20 Big} Medium {/=5 Small}'
```

**gnuplot** %I%i%$%P$,JL$J=PNO%I%i%$%P$KJQ99$5$1$F$b!"IA2h%&%#%s%I%&$O3+$$$?$^$^$K$J$j$^$9!#IA2h%&%#%s%I%&$O!"$=$N%&%#%s%I%&$K%+!<%=%k$rCV$$$FJ8;z q $r2!$9$+!"%&%#%s%I%&%^%M!<%8%c$N%a%K%e!<$N **close** $rA*Br$9$1$PJD$8$k$3$H$,$G$-$^$9!#**reset** $r<B9T$9$1$PA4$F$N%&%#%s%I%&$r0lEY$KJD$8$1$^$9!#$=$1$O<B:]$K%&%#%s%I%&$r4IM}$7$F$$$k;R%W%m%;%9$r=*N;$7$^$9($b$7 **-persist** $,;XDj$5$1$F$$$J$1$1$P)!#%3%^%s%I **close** $O!"8D!9$NIA2h%&%#%s%I%&$rHV9f$r;XDj$7$FJD$8$k$N$K;H$&$3$H$,$G$-$^$9!#$7$+$7!"persist $N$?$a$K;D$C$F$$$k$h$&$JIA2h%&%#%s%I%&$O **close** %3%^%s%I$G$OJD$8$k$3$H$O$G$-$^$;$s!#HV9f$r>JN,$7$F **close** $7$?>l9g$K$O8=:_M-8z$JIA2h%&%#%s%I%&$rJD$8$^$9!#

gnuplot $N30$K$"$k%I%i%$%P gnuplot_x11 $O!"%W%m%0%i%`$N%3%s%Q%$%k;~$KA*Br$5$1$?%G%U%)%k%H$N>l=j$,8!:w$5$1$^$9!#$3$1$O4D6-JQ?t GNUPLOT_DRIVER_DIR $r0[$J$k>l=j$HDj5A$9$k$3$H$GJQ99$G$-$^$9!#

IA2h%&%#%s%I%&$O **-persisit** %*%W%7%g%s$,M?$ ($i$l$F$$$J$1$l$P!"BPOC$N=*N;;~$K<+F0E*$KJD$8$i$l$^$9!#

%*%W%7%g%s **persist** $H **raise** $O%G%U%)%k%H$G$O@_Dj$5$l$F$$$^$;$s$,!"$=$l$O!"%G%U%)%k%H$NCM (persist == no $G raise == yes) $+!"%3%^%s%I%i%$%s%*%W%7%g%s -persist / -raise $N;XDj$+!"$^$?$O X $N%j%=!<%9CM$,;H$o$l$k!"$H$$$&$3$H$r0UL#$7$^$9!#[no]persist $+ [no]raise $,;XDj$5$l$k$H$=$l$O%3%^%s%I%i%$%s%*%W%7%g%s$d X %j%=!<%9$N@_Dj$h$j$bM%@h$5$l$^$9!#$3$l$i$N%*%W%7%g%s$N@_Dj$OD>$A$K8zNO$r;}$A$^$9$N$G!"4{$K5/F0$7$F$$$k%I%i%$%P$N5sF0$OJQ99$5$l$^$9!#%&%#%s%I%&$rA0LL$K=P$;$J$$>l9g$O!"0J2<;2>H: **raise (p. 109)**!#

%*%W%7%g%s **replotonresize** (%G%U%)%k%H$GM-8z) $O!"IA2h%&%#%s%I%&$N%j%5%$%:;~$K%G!<%?$r:FIA2h$7$^$9!#$3$N%*%W%7%g%s$J$7$@$H!"%"%9%Z%/%HHf$NJQ$o$i$J$$3HBg$G$"$C$F$b!"%j%5%$%:8e$K%&%#%s%I%&$N0lIt$J,$K$7$+IA2h$5$l$J$$2DG=@-$,$"$j$^$9!#$3$N%*%W%7%g%s$r;H$($P!"gnuplot $O3F%j%5%$%:%$%Y%s%HKh$K40A4$J:FIA2h$r9T$$$^$9$N$G!"OHFb$r$h$je:No$K;H$C$F$/$l$^$9!#%j%5%$%:$N4V$N:FIA2h$K$h$k@x:_E*$J CPU $X$NI=2Y$,?4G[$G$J$$>l9g!"$3$N%*%W%7%g%s$OI aDL$OK>$^$7$$$b$N$G$9!#:FIA2h$O!"%[%C%H%-!<'e' $d 'replot' %3%^%s%I$G<jF0$G<B9T$9$k$3$H$b2DG=$G$9!#

%*%W%7%g%s **title "<title name>"** $O8=:_$NIA2h%&%#%s%I%&$K!"$^$?$OHV9f$r;XDj$9$l$P$=$NHV9f$NIA2h%&%#%s%I%&$KBP$9$k%&%#%s%I%&%?%$%H%kL>$r$D$1$^$9!#$=$N%?%$%H%k$,I=<($5$l$k>l=j!"$^$?$OI=<($5$l$k$+$I$&$+$O!";H$C$F$$$k X $N%&%#%s%I%&^%M!<%8%c$K0MB8$7$^$9!#

%*%W%7%g%s size $O!"IA2h%&%#%s%I%&$N%5%$%:$r@_Dj$9$k$N$K;HMQ$G$-$^$9!#$3$N%*%W%7%g%s$O!"$=$N8e$K@8@.$9$k%&%#%s%I%&$N$_$KE,MQ$5$l$^$9!#

%*%W%7%g%s position $O!"IA2h%&%#%s%I%&$N0LCV$r@_Dj$9$k$N$K;H$($^$9!#$3$N%*%W%7%g%s$O!"$=$N8e$K@8@.$9$k%&%#%s%I%&$N$_$KE,MQ$5$l$^$9!#

IA2h%5%$%:$H%"%9%Z%/%HHf$O!"**gnuplot** $N%&%#%s%I%&$r%j%5%$%:$9$k$3$H$G$bJQ99$G$-$^$9!#

@~$NI}$HE@$N%5%$%:$O **gnuplot** $N **set linestyle** $GJQ992DG=$G$9!#

=PNO%I%i%$%P **x11** $K4X$7$F$O!"**gnuplot** $O (5/F0;~$K) !"%3%^%s%I%i%$%s!"$^$?$O@_Dj%U%!%$%k$+$i!"geometry $d font, name $J$I$NDL>o$N X Toolkit %*%W%7%g%s$d%j%=!<%9$N;XDj$r<u$1IU$1$^$9!#$=$l$i$N%*%W%7%g%s$K$D$$$F$O X(1) %^%K%e%"%k%Z!<%8 ($d$=$l$HF1Ey$N$b$N) $r;2>H$7$F$/$@$5$$!#

B>$K$b **x11** =PNO7A<0MQ$NB?$/$N **gnuplot** $N%*%W%7%g%s$,$"$j$^$9!#$3$l$i$O **gnuplot** $r8F$V$H$-$K%3%^%s%I%i%$%s%*%W%7%g%s$H$7$F;XDj$9$k$+!"$^$?$O@_Dj%U%!%$%k ".Xdefaults" $N%j%=!<%9$H$7$F;XDj$G$-$^$9!#$3$l$i$O5/F0;~$K@_Dj$5$l$k$N$G!"**gnuplot** <B9T;~$K$OJQ99$G$-$^$;$s (**persist** $H **raise** 0J30$O)!#

## X11 $N%U%)%s%H (x11_fonts)

=i4|5/F0;~$O!"%7%9%F%`$N@_Dj$+!"%f!<%6$N .Xdefaults %U%!%$%k$N@_Dj$+!"%3%^%s%I%i%$%s;XDj$+!"$N$$$:$l$+$K$h$k X11 %j%=!<%9$K$h$C$F%G%U%)%k%H$N%U%)%s%H$,A*Br$5$l$^$9!#

Nc:

```
gnuplot*font: lucidasans-bold-12
```

?7$7$$%G%U%)%k%H$N%U%)%s%H$r!"gnuplot FbIt$+$i x11 %I%i%$%P$K0J2<$N$h$&$K$7$F;X<($9$k$3$H$b$G$-$^$9:

```
‘set term x11 font "<fontspec>"‘
```

$^$: x11 %I%i%$%P$O!"M?$($i$l$?%U%)%s%H$N@5<0L>$r X %5!<%P$K?R$M$^$9!#$3$NLd$$9g$o$;$,<:GT$7$?>l9g!" <fontspec> $r"<font>,<size>,<slant>,<weight>" $H2r<a$7!"0J2<$N7A$N40A4$J X11 %U%)%s%HL>$r@8@.$7$h$&$H$7$^$9:

```
-*-<font>-<weight>-<s>-*-*-<size>-*-*-*-*-*-<encoding>
```

```
<font> $O%U%)%s%H$N4pK\L> (base name) (Nc: Times, Symbol)
<size> $O%]%$%s%H%5%$%: (;XDj$,$J$1$l$P%G%U%)%k%H$O 12)
<s> $O <slant>=="italic" $J$i ‘i‘, <slant>=="oblique" $J$i ‘o‘, $=$NB>$O ‘r‘
<weight> $OL@<(E*$K;XDj$5$l$l$P ‘medium‘ $+ ‘bold‘!"$=$NB>$O ‘*‘
<encoding> $O8=:_$NJ8;z=89g$K4p$E$$$F@_Dj (0J2<;2>H: ‘set encoding‘)
```

$h$C$F **set term x11 font "arial,15,italic"** $O (%G%U%)%k%H$N encoding $@$H$9$l$P) -\*-arial-\*-i-\*-\*-15-\*-\*-\*-\*-\*-iso8859-1 $KJQ49$5$l$^$9!#<size>, <slant>, <weight> ;XDj$O$$$:$l$bI,?\$G$O$"$j$^$;$s!#<slant> $d <weight> $r;XDj$7$J$+$C$?>l9g$O!"%U%)%s%H%5!<%P$,:G=i$K8+$D$1$?!"JQ<o$N%U%)%s%H$r<hF@$9$k$+$b$7$l$^$;$s!#%G%U%)%k%H$N%(%s%3!<%G%#%s%0$O!"BP1~$9$k X11 %j%=!<%9$r;H$C$F@_Dj$9$k$3$H$b$G$-$^$9!#Nc:

```
gnuplot*encoding: iso8859-15
```

x11 %I%i%$%P$O!"0lHLE*$J PostScript %U%)%s%HL>$bG'<1$7!"$=$l$HF1Ey$GM-8z$J X11 %U%)%s%H$+ TrueType %U%)%s%H$KCV$-49$($^$9!#$3$l$HF1$8<j=g$,!"**set label** $NMW5a$K$h$k%U%)%s%H$N@8@.$G$b;H$o$l$F$$$^$9!#

$"$J$?$N gnuplot $, configure $N –enable-x11-mbfonts %*%W%7%g%s$r$D$1$F%$%s%9%H!<%k$5$l$?$b$N$J$i!"%U%)%s%HL>$NA0$K "mbfont:" $r$D$1$k$3$H$G%^%k%A%P%$%H%U%)%s%H$r;XDj$9$k$3$H$,$G$-$^$9!#%U%)%s%HL>$rJ#?t;XDj$9$k8D$H$b$G$-$^$9$,!"$=$N>l9g$O%;%_%3%m%s$G6h@Z$j$^$9!#%^%k%A%P%$%H%U%)%s%H$N%(%s%3!<%G%#%s%0$O locale $N@_Dj$K=>$$$^$9$N$G!"4D6-JQ?t LC_CTYPE $rE,@Z$JCM (Nc$($P ja_JP.eucJP, ko_KR.EUC, zh_CN.EUC $J$I) $K$K@_Dj$9$kI,MW$,$"$j$^$9!#

Nc:

```
     set term x11 font 'mbfont:kana14;k14'
           # 'kana14' $H 'k14' $OF|K\8l$N X11 font %(%$%j%"%9L>!"';'
           # $O%U%)%s%HL>$N6h@Z$j$G$9!#
     set term x11 font 'mbfont:fixed,16,r,medium'
           # <font>,<size>,<slant>,<weight> 7A<0$b;HMQ$G$-$^$9!#
     set title '(mb strings)' font 'mbfont:*-fixed-medium-r-normal--14-*'
```

F1$8=q<0$O X $N%j%=!<%9$G$N%G%U%)%k%H%U%)%s%H$N@_Dj$G$bM-8z$G$9!#Nc:

```
     gnuplot*font: \
         mbfont:-misc-fixed-medium-r-normal--14-*-*-*-c-*-jisx0208.1983-0
```

gnuplot $, –enable-x11-mbfonts $G%$%s%9%H!<%k$5$l$?>l9g!""mbfont:" $r$D$1$J$/$F$b2 $D$NFCJL$J PostScript %U%)%s%HL> 'Ryumin-Light-*', 'GothicBBB-Medium-*' (I8=`E*$JF|K\8l PS %U%)%s%H) $r;H$&$3$H$b$G$-$^$9!#

### %3%^%s%I%i%$%s%*%W%7%g%s (command-line_options)

X Toolkit %*%W%7%g%s$K2C$(!"0J2<$N%*%W%7%g%s$, gnuplot $NN)$A>e$2;~$N%3%^%s%I%i%$%s$G!"$^$?$O%f!<%6$N%U%!%$%k ".Xdefaults" Fb$N%j%=!<%9$H$7$F;XDj$G$-$^$9 (**raise** $H **persist** $O **set term x11 [no]raise [no]persist** $K$h$C$F>e=q$-$5$l$k$3$H$KCm0U$7$F$/$@$5$$):

| | |
|---|---|
| ‘-mono‘ | %+%i!<%G%#%9%W%l%$>e$G6/@)E*$KGr9uIA2h |
| ‘-gray‘ | %0%l%$%9%1!<%k$^$?$O%+%i!<%G%#%9%W%l%$>e$G$N%0%l%$%9%1!<%kIA2h (%G%U%)%k%H$G$O%0%l%$%9%1!<%k%G%#%9%W%l%$$OGr9uIA2h$r<u$1IU$1$k) |
| ‘-clear‘ | ?7$7$$IA2h$rI=<($9$kA0$K (=V4VE*$K) 2hLL$r>C5n |
| ‘-tvtwm‘ | geometry %*%W%7%g%s$K$h$k0LCV$N;XDj$r!"2>A[%k!<%H%&%#%s%I%&Cf$N8=:_$NI=<(ItJ,$KBP$9$kAjBPE*$J0LCV$K$9$k |
| ‘-raise‘ | 3FIA2h8e$KIA2h%&%#%s%I%&$r:GA0LL$X=P$9 |
| ‘-noraise‘ | 3FIA2h8e$KIA2h%&%#%s%I%&$r:GA0LL$X=P$9$3$H$O$7$J$$ |
| ‘-persist‘ | gnuplot %W%m%0%i%`=*N;8e$bIA2h%&%#%s%I%&$r;D$9 |

>e5-$N%*%W%7%g%s$O%3%^%s%I%i%$%s>e$G$N;XDj=q<0$G!"".Xdefaults" $K%j%=!<%9$H$7$F;XDj$9$k$H$-$O0[$J$k=q<0$r;H$$$^$9!#

Nc:

```
     gnuplot*gray:  on
     gnuplot*ctrlq: on
```

**gnuplot** $OIA2h%9%?%$%k **points** $GIA2h$9$kE@$N%5%$%:$N@)8f$K$b!"%3%^%s%I%i%$%s%*%W%7%g%s (**-pointsize <v>**) $H%j%=!<%9 (**gnuplot*pointsize: <v>**) $rDs6!$7$F$$$^$9!#CM **v** $OE@$N%5%$%:$N3HBgN($H$7$F;H$o$l$k<B?tCM $(0 < v <= 10)$ $G!"Nc$($P **-pointsize 2** $O%G%U%)%k%H$N%5%$%:$N 2 G\!"**-pointsize 0.5** $OIaDL$N%5%$%:$NH>J,$NE@$,;H$o$l$^$9!#

**-ctrlq** %9%#%C%A$O!"IA2h%&%#%s%I%&$rJD$8$k%[%C%H%-!<$r **q** $+$i <**ctrl**>**q** $KJQ99$7$^$9!#$3$l$O!"**pause mouse keystroke** $K$h$k%-!<%9%H%m!<%/$NJ]B8$r;H$C$F$$$k>l9g$K$O!"B>$N%"%k%U%!%Y%C%HJ8;z$HF1MM$K **q** $rJ]B8$G$-$k$h$&$K$J$k$N$GM-MQ$G$7$g$&!#F1$8M}M3$G!"**-ctrlq** %9%#%C%A$O <space> %[%C%H%-!<$b <ctrl><space> $KCV$-49$($^$9!#

## %+%i!<%j%=!<%9 (color_resources)

Cm0U: $3$N%;%/%7%g%s$O!"gnuplot %P!<%8%g%s 5 $H$OBg$-$/$:$l$F$$$^$9!#x11 =PNO7A<0$OO J2<$N%j%=!<%9 ($3 $3$G$O$=$N%G%U%)%k%H$NCM$r< ($7$^$9)!"$^$?$OGr9u3,D4 (greyscale) $N%j%=!<%9$r;2>H$7$^$9!#%j%=!<%9$NCM $O%7%9%F%`>e$N X11 rgb.txt %U%!%$%k$K=q$+$l$F$$$k?'L>!"$^$?$O 16 ?J$N?';XDj (X11 $N%^%K%e%"%k$r;2>H) $+!"?'L>$H6/EY (0 $+$i 1 $N4V$NCM) $r%3%s%^$G6h@Z$C$?CM$r;HMQ$G$-$^$9!#Nc$ ($P **blue, 0.5** $OH>J,$N6/EY $N@D!"$r0UL#$7$^$9!#

```
gnuplot*background: white
gnuplot*textColor: black
gnuplot*borderColor: black
gnuplot*axisColor: black
gnuplot*line1Color: red
gnuplot*line2Color: green
gnuplot*line3Color: blue
gnuplot*line4Color: magenta
gnuplot*line5Color: cyan
gnuplot*line6Color: sienna
gnuplot*line7Color: orange
gnuplot*line8Color: coral
```

$3$l$i$K4X$9$k%3%^%s%I%i%$%s$N=q<0$O!"GX7J (bacground) $K4X$7$F$OC1=c$GDL>o$N X11 toolkit %*%W%7%g%s $N "-bg" $KD>@\BP1~$7$^$9!#B>$N$b$N$b!"A4$F0lHlE*$J%j%=!<%9$N>e=q$-%*%W%7%g%s "-xrm" $r;H$&$3$H$G@_ Dj$G$-$^$9!#

Nc:

GX7J?'$rJQ99$9$k$K$O

```
gnuplot -background coral
```

@~<o 1 HVL\$N?'$r=q$-49$ ($k$K$O

```
gnuplot -xrm 'gnuplot*line1Color:blue'
```

## 3%?'3,D4%j%=!<%9 (grayscale_resources)

**-gray** $rA*Br$9$k$H!"**gnuplot** $O!"%0%l%$%9%1!<%k$^$?$O%+%i!<%G%#%9%W%l%$$KBP$7$F!"0J2<$N%j%=!<%9$r;2 >H$7$^$9 ($3$3$G$O$=$N%G%U%)%k%H$NCM$r< ($7$^$9)!#%G%U%)%k%H$NGX7J?'$O9u$G$"$k$3$H$KCm0U$7$F$/$@$5$$!#

```
gnuplot*background: black
gnuplot*textGray: white
gnuplot*borderGray: gray50
gnuplot*axisGray: gray50
gnuplot*line1Gray: gray100
gnuplot*line2Gray: gray60
gnuplot*line3Gray: gray80
gnuplot*line4Gray: gray40
gnuplot*line5Gray: gray90
gnuplot*line6Gray: gray50
gnuplot*line7Gray: gray70
gnuplot*line8Gray: gray30
```

## @~IA2h%j%=!<%9 (line_resources)

Cm0U: $3$N%;%/%7%g%s$O!"gnuplot %P!<%8%g%s 5 $H$OBg$-$/$:$l$F$$$^$9!#**gnuplot** $OIA2h$N@~$NI} (%T%/%; %kC10L) $N@_Dj$N$?$a$K0J2<$N%j%=!<%9$r;2>H$7$^$9 ($3$3$G$O$=$N%G%U%)%k%H$NCM$r< ($7$^$9)!#0 $^$?$O 1 $O:G>.$N@~I}$N 1 %T%/%;%kI}$r0UL#$7$^$9!#2 $^$?$O 3 $NCM$K$h$C$F%0%i%U$N3 04Q$r2~A1$G$-$k>l9g$b$"$k$G $7$g$&!#

```
gnuplot*borderWidth: 1
gnuplot*axisWidth: 0
gnuplot*line1Width: 0
gnuplot*line2Width: 0
gnuplot*line3Width: 0
gnuplot*line4Width: 0
gnuplot*line5Width: 0
gnuplot*line6Width: 0
gnuplot*line7Width: 0
gnuplot*line8Width: 0
```

**gnuplot** $O@~IA2h$G;HMQ$9$kE@@~$N7A<0$N@_DjMQ$K0J2<$N%j%=!<%9$r;2>H$7$^$9!#0 $O<B@~$r0UL#$7$^$9!#2 7e$N10 ?J?t **jk** (**j** $H **k** $O 1 $+$i 9 $^$G$NCM) $O!"**j** 8D$N%T%/%;%k$NIA2h$K **k** 8D$N6uGr$N%T%/%;%k$,B3$/%Q%?!<%s$N7+$jJV$7$+$i$J$kE@@~$r0UL#$7$^$9!#Nc$($P '16' $O 1 8D$N%T%/%;%k$N8e$K 6 $D$N6uGr$,B3$/%Q%?!<%s$NE@@~$K$J$j$^$9!#$5$i$K!"4 7e$N10 ?J?t$G$h$j>\:Y$J%T%/%;%k$H6uGr$NNs$N%Q%?!<%s$r;XDj$G$-$^$9!#Nc$($P!"'4441' $O 4 $D$N%T%/%;%k!"4 $D$N6uGr!"4 $D$N%T%/%;%k!"1 $D$N6uGr$N%Q%?!<%s$r0UL#$7$^$9!#0J2<$N%G%U%)%k%H$N%j%=!<%9CM$O!"Gr9u%G%#%9%W%l%$!"$"$k$$$O%+%i!<$dGr9u3,D4 (grayscale) %G%#%9%W%l%$>e$NGr9uIA2h$K$*$1$kCM$G$9!#%+%i!<%G%#%9%W%l%$$G$O dashed:off $,%G%U%)%k%H$K$J$C$F$$$^$9!#

```
gnuplot*dashed: off
gnuplot*borderDashes: 0
gnuplot*axisDashes: 16
gnuplot*line1Dashes: 0
gnuplot*line2Dashes: 42
gnuplot*line3Dashes: 13
gnuplot*line4Dashes: 44
gnuplot*line5Dashes: 15
gnuplot*line6Dashes: 4441
gnuplot*line7Dashes: 42
gnuplot*line8Dashes: 13
```

### X11 pm3d %j%=!<%9 (pm3d_resources)

Cm0U: $3$N%;%/%7%g%s$O!"gnuplot %P!<%8%g%s 5 $H$OBg$-$/$:$l$F$$$^$9!#E,@Z$J visual %/%i%9$H?'?t$rA*Br$9$k$N$O!"X11 %"%W%j%1!<%7%g%s$K$H$C$F6l$7$/!"$A$g$C$HLq2p$J$3$H$G$9!#$=$l$O X11 $,0[$J$k?<EY (depth) $N 6 $D$N visual 7?$r%5%]!<%H$7$F$$$k$+$i$G$9!#

%G%U%)%k%H$G$O **gnuplot** $O$=$N%9%/%j!<%s$N%G%U%)%k%H$N visual $r;HMQ$7$^$9!#3d$jEv$F$k$3$H$N$G$-$k?'?t$OA*Br$5$l$? visual %/%i%9$K$h$C$FJQ$o$j$^$9!#12bit $rD6$($k?<EY$r;}$D visual %/%i%9>e$G$O!"gnuplot $O:GBg?'?t$G$"$k 0x200 (=512) ?'$G5/F0$7$^$9!#8bit $rD6$($k (12bit 0J2<$G) ?<EY$N visual %/%i%9$G$O:GBg?'?t$O 0x100 (=256) ?'!"8bit 0J2<$N%G%#%9%W%l%$$G$O:GBg?'$O 240 (16 ?'$O6J@~$N?'MQ$K<h$i$l$k) $K$J$j$^$9!#

gnuplot $O:G=i$K!">e$K=R$Y$?$h$&$J:GBg?'$r3d$jEv$F$h$&$H5/F0$7$^$9!#$3$l$K<:GT$9$k$H$=$N?'?t$O!"gnuplot $,$=$NA4It$r3d$jIU$1$k$3$H$,$G$-$k$^$G!"1/2 $:$D8:$i$5$l$^$9!#**maxcolors** $r7+$jJV$7 2 $G3d$C$?7k2L!"**mincolors** $h$j$b>.$5$$?t;z$K$J$C$?>l9g!"**gnuplot** $O private %+%i!<%^%C%W$r;H$*$&$H$7$^$9!#$3$N>l9g!"%&%#%s%I%&%^%M!<%8%c$O!"%]%$%s%?$,X11 %I%i%$%P$N%&%#%s%I%&$KF~$k$+=P$k$+$G%+%i!<%^%C%W$rB`Hr (swapping) $5$;$k@UG$$r;}$D$3$H$K$J$j$^$9!#

**mincolors** $N%G%U%)%k%H$NCM$O maxcolors / (num_colormaps > 1 ? 2 : 8) $G!"num_colormaps $O gnuplot $,8=:_;HMQ$7$F$$$k%+%i!<%^%C%W$N?t$G!"$3$l$O!"x11 $N%&%#%s%I%&$,1 $D$@$13+$$$F$$$k$h$&$JDL>o$N>l9g$O 1 $G$9!#

J#?t$N (0[$J$k) visual %/%i%9$r!"0l$D$N%9%/%j!<%s>e$G%5%]!<%H$9$k$h$&$J%7%9%F%`$b$"$j$^$9!#$3$N$h$&$J%7%9%F%`$G$O!"gnuplot $K;XDj$7$?visual %/%i%9$r6/@)E*$K;H$o$;$kI,MW$,$"$j$^$9!#Nc$($P!"%G%U%)%k%H$N visual $, 8bit PseudoColor $@$1$l$I$b%9%/%j!<%s$O 24bit TrueColor $r%5%]!<%H$7$F$$$F$`$7$m$3$A$i$NJ}$rA*Br$9$Y$-$G$"$k$h$&$J>l9g$G$9!#

X %5!<%P$NG=NO$K4X$9$k>pJs$O%W%m%0%i%` **xdpyinfo** $G<hF@$G$-$^$9!#visual L>$O<!$N$&$A$N0l$D$,A*Br$G$-$^$9: StaticGray, GrayScale, StaticColor, PseudoColor, TrueColor, DirectColor!#$=$N X %5!<%P$,MW5a$5$l

$? visual 7?$N0[$J$kJ#?t$N?<EY$r%5%]!<%H$7$F$$$k>l9g!"**gnuplot** $O:G$bBg$-$$(:G?<$N)?<EY$N visual %/%i%9$rA*Br$7$^$9!#MW5a$5$l$?visual %/%i%9$,%G%U%)%k%H$N visual $H$"$C$F$$$F!"$=$N7?$NJ#?t$N%/%i%9$,%5%]!<%H$5$l$F$$$k>l9g$O!"%G%U%)%k%H$N visual $,A*Br$5$l$^$9!#

Nc: 8bit PseudoColor $N visual >e$G$O!"**gnuplot*maxcolors: 240**!"5Z$S**gnuplot*mincolors: 240** $H;XDj$9$k$3$H$G6/@)E*$K private %+%i!<%^%C%W$r;H$&$h$&$K$G$-$^$9!#

```
gnuplot*maxcolors: @0?t
gnuplot*mincolors: @0?t
gnuplot*visual: visual L>
```

### X11 $NB>$N%j%=!<%9 (other_resources)

%G%U%)%k%H$G$O!"8=:_$NIA2h%&%#%s%I%&$NFbMF$O!"%&%#%s%I%&$N X %$%Y%s%H$K=>$C$F X11 %/%j%C%W%\!<%I$KAw$i$l$^$9!#'gnuplot*exportselection' $N%j%=!<%9$NCM$r 'off' $+ 'false' $H@_Dj$9$k$3$H$K$h$j$3$l$rL58z$K$G$-$^$9!#

%G%U%)%k%H$G$O!"J8;z$N2sE>$OB.$/$=$l$r9T$J$&J}K!$,;H$o$l$^$9$,!"GX7J?'$K$h$C$F$O$=$NIU6a$,1x$l$k$3$H$,$"$j$^$9!#$3$l$,5/$3$k>l9g$O!"%j%=!<%9'gnuplot.fastrotate' $r 'off' $K$7$F$_$F$/$@$5$$!#

```
gnuplot*exportselection: off
gnuplot*fastrotate: on
gnuplot*ctrlq: off
```

## Xlib

**xlib** %I%i%$%P$O X11 Windows System $r%5%]!<%H$7$F$$$^$9!#$3$N%I%i%$%P$O gnuplot_x11 $X$NL?Na$r@8@.$7$^$9$,!"**set output '<filename>'** $r;XDj$9$k$H$=$l$i$r%U%!%$%k$K=q$-=P$7$^$9!#**set term x11** $O!"**set output "|gnuplot_x11 -noevents"; set term xlib** $HF1CM$G$9!#**xlib** $K$O **x11** $HF1$8%*%W%7%g%s$NAH$rM?$($k$3$H$,$G$-$^$9!#

## Part V

# %P%0 (Bugs)

%P%0%j%]!<%H$O e-mail $G gnuplot-bugs %a!<%j%s%0%j%9%H$XAw$k$+!"$^$?$OSourceForge $N gnuplot %&%'%V%5%$%H$K$=$NJs9p$rEj9F$7$F$/$@$5$$!#$=$N:]!"$"$J$?$,;HMQ$7$F$$$k gnuplot $N%P!<%8%g%s$N4 0A4$J>pJs!"$=$7$F2DG=$J$i$P$=$N%P%0$r<B>Z$9$k%F%9%H%9%/%j%W%H$rAw$C$F$/$@$5$$!#0J2<;2>H: **seeking-assistance (p. 20)**!#

## CN$i$l$F$$$k@)8B (limitations)

**do** $d **while** %k!<%W$NCf3g8lFb$G%$%s%i%$%s%G!<%?(Nc: plot '-' ...) $r;H$&$3$H$O$G$-$^$;$s!#

%,%s%^4X?t$H%Y%C%;%k4X?t$OJ#AG?t0z?t$r%5%]!<%H$7$F$$$^$;$s!#

";~9o" $H$7$F;XDj$5$l$?:BI8$O 24 ;~$G@^$jJV$7$^$9!#

G^2pJQ?t$N6J@~: **nohidden3d** $O!"A4BNE*$J@_Dj$G$"$k **set hidden3d** $r8D!9$N%0%i%U$KBP$7$FLH=|$9$k$?$a$N%*%W%7%g%s$G$9$,!"$3$l$OG^2pJQ?t$N6J@~(parametric) $KBP$7$F$O5!G=$7$^$;$s!#%3%^%s%I **plot** Fb$N7+$jJV$7 (iteration) $O!"G^2pJQ?t$N6J@~$KBP$7$F$O5!G=$7$^$;$s!#

X11 =PNO7A<0: UTF-8 %U%)%s%H$NA*Br$,:$Fq$G$9!#$9$Y$F$N x11 IA2h%&%#%s%I%&$KBP$7$F!"0lEY$K$O 1 $D$N%+%i!<%Q%l%C%H$N$_$,M-8z$G$9!#$3$l$O!"0[$J$k%Q%l%C%H$r;HMQ$9$kIA2h$r4^$s$@ multiplot $G$O x11 >e$G$O@5$7$/I=<($5$l$J$$$3$H$r0UL#$7$^$9!#

Qt =PNO7A<0: 3 <!85$G$NB?3Q7A$d6JLL$N2sE>$OCY$/$J$k2DG=@-$,$"$j$^$9$,!"$3$l$O Qt $N%l%s%@%j%s%0%b!<%I (Qt $N@bL@=q$r;2>H$7$F$/$@$5$$) $K6/$/0MB8$7$^$9!#

**raise** $H **lower** $N5!G=$O$"$^$jEv$F$K$G$-$^$;$s!#

## 30It%i%$%V%i%j (External libraries)

30It%i%$%V%i%j GD (PNG/JPEG/GIF %I%i%$%P$G;HMQ): %P!<%8%g%s 2.0.33 $^$G$N libgd $K$O!"Adobe $N Symbol %U%)%s%H$NJ8;z$N%^%C%T%s%0$K4X$9$k$$$/$D$+$N%P%0$,$"$j$^$7$?!#$^$?!"%"%s%A%(%$%j%"%9$5$l$?@~J,$,%-%c%s%P%9$N>e$N3Q$H8r$o$k>l9g$K!"%i%$%V%i%j$,%;%0%a%s%F!<%7%g%s%U%)%k%H$r0z$-5/$9$3$H$b$"$j$^$7$?!#

30It%i%$%V%i%j PDFlib (PDF %I%i%$%P$G;HMQ): gnuplot $O libpdf $N%P!<%8%g%s 4, 5, 6 $N$$$:$l$+$r%j%s%/$G$-$^$9!#$7$+$7!"$3$l$i$O%P!<%8%g%s$K$h$C$F%Q%$%W$5$l$?F~=PNO$N=hM}$,0c$C$F$$$^$9$N$G!"%Q%$%W$r;H$C$F PDF $r=PNO$9$k gnuplot %9%/%j%W%H$O!"PDFlib $N$"$k%P!<%8%g%s$G$@$1$7$+$A$c$s$HF0$+$J$$$+$b$7$l$^$;$s!#

30It%i%$%V%i%j svgalib (linux, vgadl %I%i%$%P$G;HMQ): $3$l$O gnuplot $, root $K setuid (7y!) $5$l$k$3$H$rMW5a$7$^$9$7!"%S%G%*%+!<%I$d X11 $G;HMQ$5$l$k%0%i%U%#%C%/%I%i%$%P$KFCM-$NB?$/$N%P%0$,$"$j$^$9!#

9q:]2=(%m%1!<%k$N@_Dj): gnuplot $O!"F~=PNO$N?t!";~9o!"F|IUJ8;zNs$N%m%1!<%k$K0MB8$7$?=q<0$N@)8f$r!"C %i%s%?%$% `%i%$%V%i%j$K4^$^$l$k setlocale() $rMQ$$$F9T$&$N$G!"%m%1!<%k$NM-8z@-$d!"%m%1!<%k5!G=$N%5%]!<%H$N%l%Y%k (Nc$($P?t;z$N 3 7eKh$N6h@Z$jJ8;z$J$I) $J$I$O!"$"$J$?$N%3%s%T%e!<%?$,Ds6!$9$k9q:]2=$N%5%]!<%H$NEY9g$$$K0MB8$7$^$9!#

## Part VI

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