Gnuplot

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The `gnuplot` utility can be used for plotting sets of points. However, here we will only discuss drawing curves.

1 Introduction

The two modes for running `gnuplot` are *interactive* and *from file*. In interactive mode, you call `gnuplot` from the command line, type commands, and watch output appear (see next paragraph); in the second case you call `gnuplot <your file>`.

The output of `gnuplot` can be a picture on your screen, or drawing instructions in a file. Where the output goes depends on the setting of the *terminal*. By default, `gnuplot` will try to draw a picture. This is equivalent to declaring

```
set terminal x11
```

or `aqua`, `windows`, or any choice of graphics hardware.

For output to file, declare

```
set terminal pdf
```

or `fig`, `latex`, `pbm`, et cetera.

2 Plotting

The basic plot command is `plot`. By specifying

```
plot x**2
```

you get a plot of $f(x) = x^2$; `gnuplot` will decide on the range for x. With

```
set xrange [0:1]
plot 1-x title "down", x**2 title "up"
```

you get two graphs in one plot, with the x range limited to $[0, 1]$, and the appropriate legends for the graphs. The variable `x` is the default for plotting functions.

Plotting one function against another – or equivalently, plotting a parametric curve – goes like this:

```
set parametric
plot [t=0:1.57] cos(t),sin(t)
```

which gives a quarter circle.

To get more than one graph in a plot, use the command `set multiplot`.

2.1 Styles

You can change the default drawing style with

```
set style function dots
```

(`lines`, `dots`, `points`, et cetera), or change on a single plot with

```
plot f(x) with points
```

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