

Gnuplot Overview

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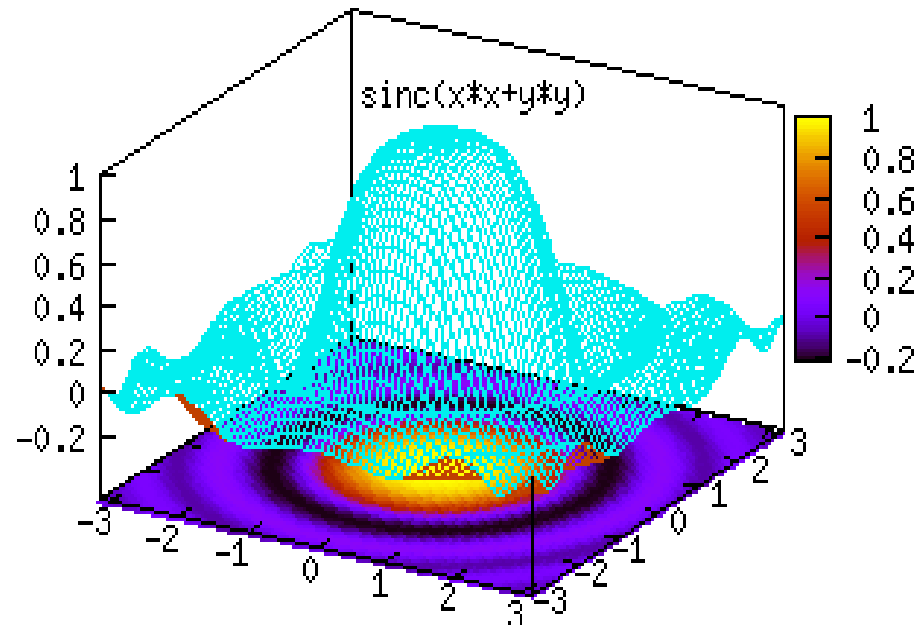
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What is Gnuplot?

- Open source tool for visualizing and analyzing data
- Command line based plotting program
 - 2D and 3D plot
- Supporting platform
 - Windows
 - Linux
 - Unix
 - OSX
 - ...



Gnuplot Command Line Interface

```
G N U P L O T
```

```
Version 4.2 patchlevel 4
```

Version

```
last modified Sep 2008
```

```
System: Linux 2.6.28-15-server
```

```
Copyright (C) 1986 - 1993, 1998, 2004, 2007, 2008
```

```
Thomas Williams, Colin Kelley and many others
```

```
Type `help` to access the on-line reference manual.
```

```
The gnuplot FAQ is available from http://www.gnuplot.info/faq/
```

```
Send bug reports and suggestions to
```

```
<http://sourceforge.net/projects/gnuplot>
```

Terminal Type: wxt

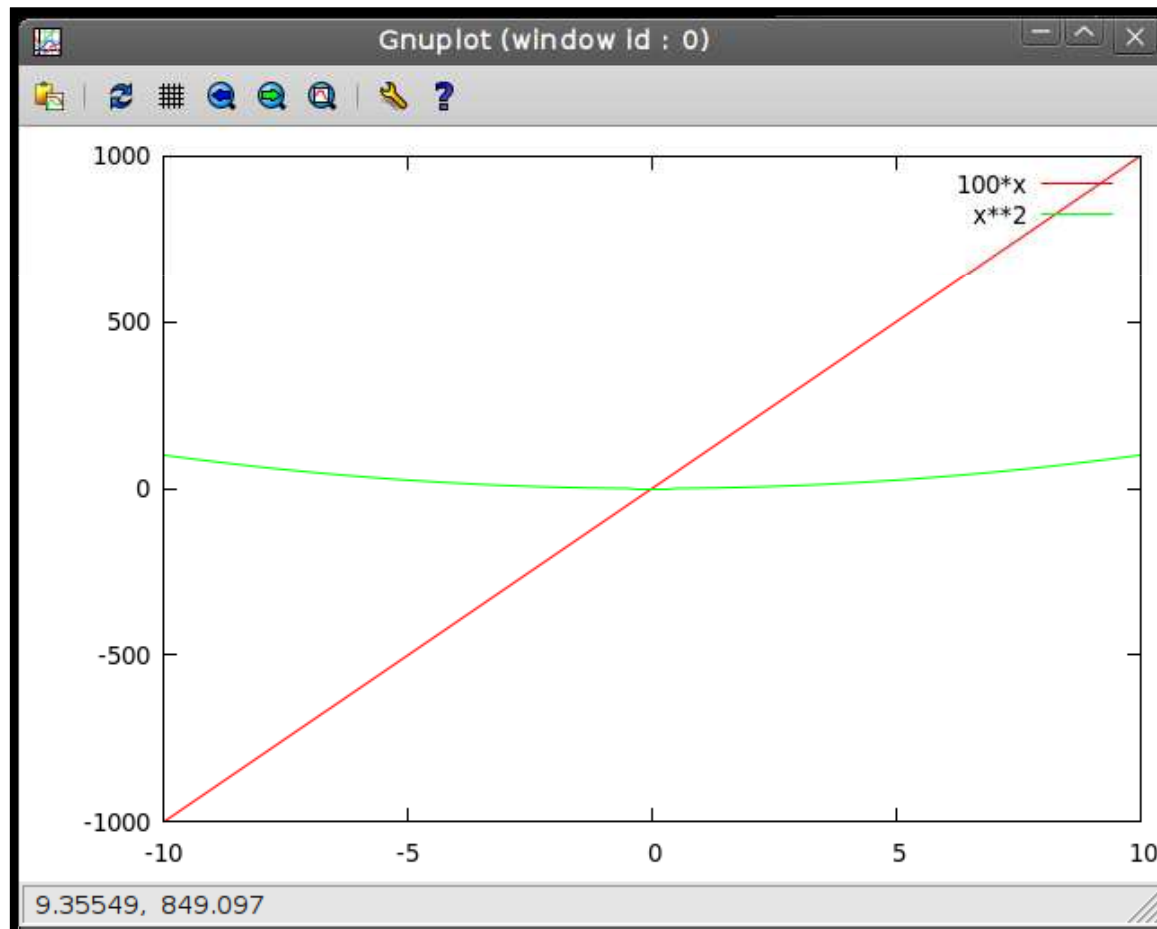
```
Terminal type set to 'wxt'
```

```
gnuplot>
```

Wait for command

Gnuplot Example 1

```
gnuplot> plot 100*x, x**2
```



Gnuplot Add-on Command

- Set X and Y label
 - `gnuplot> set xlabel "Value of X"`
 - `gnuplot> set ylabel "Value of Y"`
- Set Legend
 - `gnuplot> plot x title "y=x", x*x \`
`title "y=x*x"`
- Set Title
 - `gnuplot> set title "Function Y of X"`

Gnuplot Add-on Command

- Set X and Y range
 - `gnuplot> set xrange [0:15]`
 - `gnuplot> set yrange [0:500]`
- Set Xtics and Ytics range
 - `gnuplot> set xtics 1.5`
 - `gnuplot> set ytics 2`
- Set grid
 - `gnuplot> set grid`
 - `gnuplot> unset grid`

Gnuplot Add-on Command

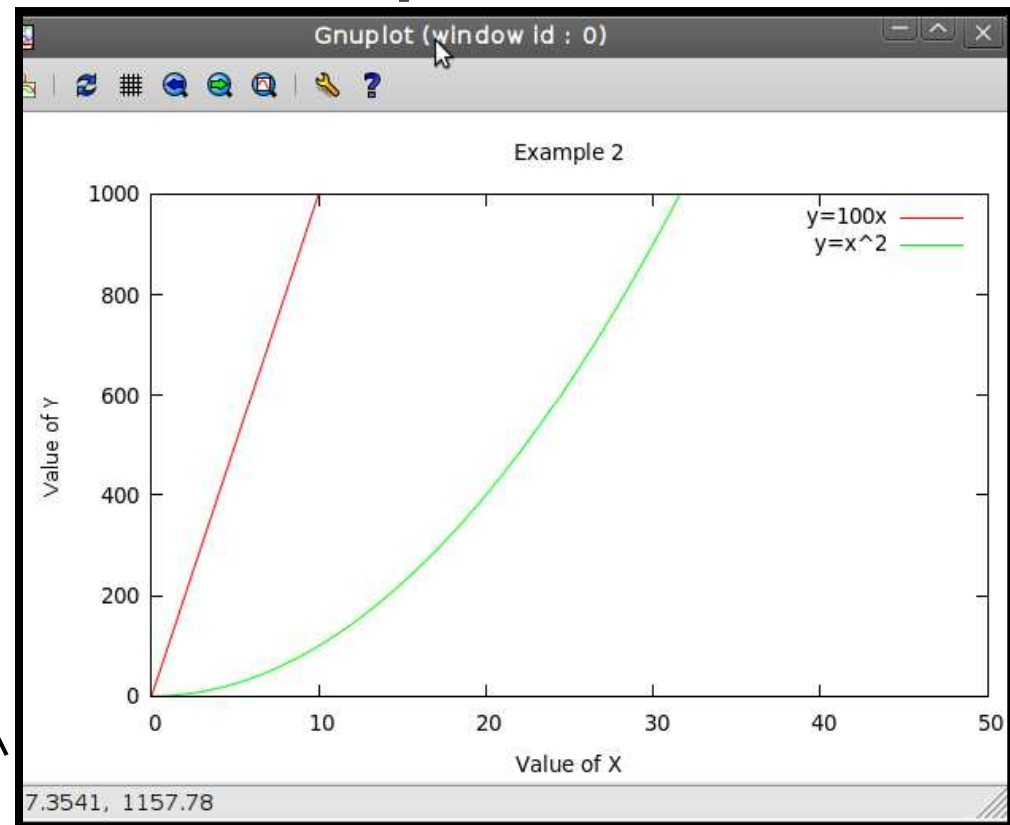
- Replotting
 - `gnuplot> replot`

Gnuplot Example 2

```
gnuplot> set xlabel "Value of X"  
gnuplot> set ylabel "Value of Y"  
gnuplot> set title "Example 2"  
gnuplot> set xrange [0:50]  
gnuplot> set yrange [0:1000]  
gnuplot> plot 100*x title "y=100x", \ x**2  
      title "y=x^2"
```

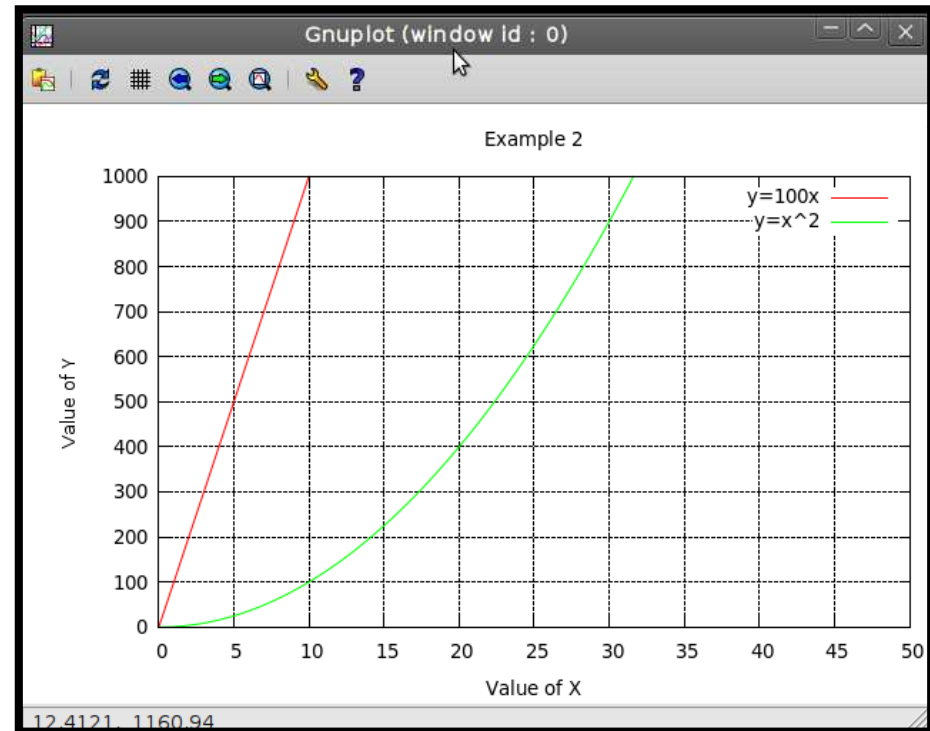

Gnuplot Example 2: Output

```
set xlabel "Value of X"
set ylabel "Value of Y"
set title "Example 2"
set xrange [0:50]
set yrange [0:1000]
plot 100*x title "y=100x", \
     x**2 title "y=x^2"
```



Gnuplot Example 2: More command

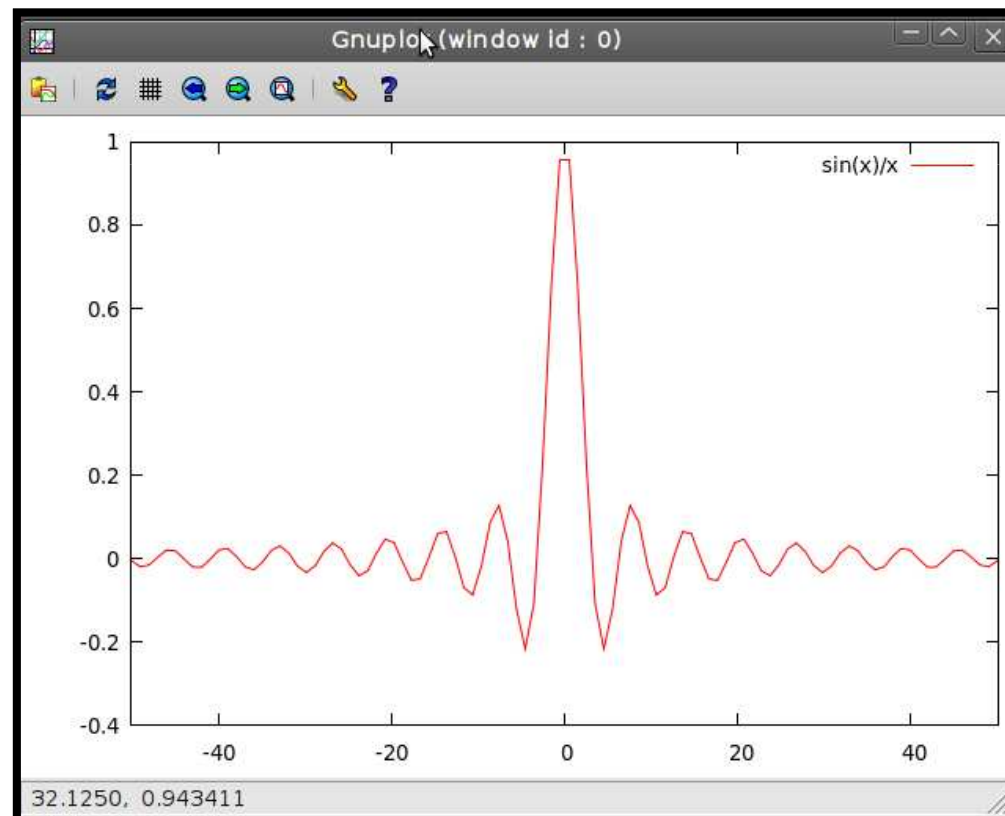
```
gnuplot> set xtics 5  
gnuplot> set ytics 100  
gnuplot> set grid  
gnuplot> replot
```



Plot Sinc Function: $\sin(x)/x$

```
gnuplot> set xrange [-50:50]
```

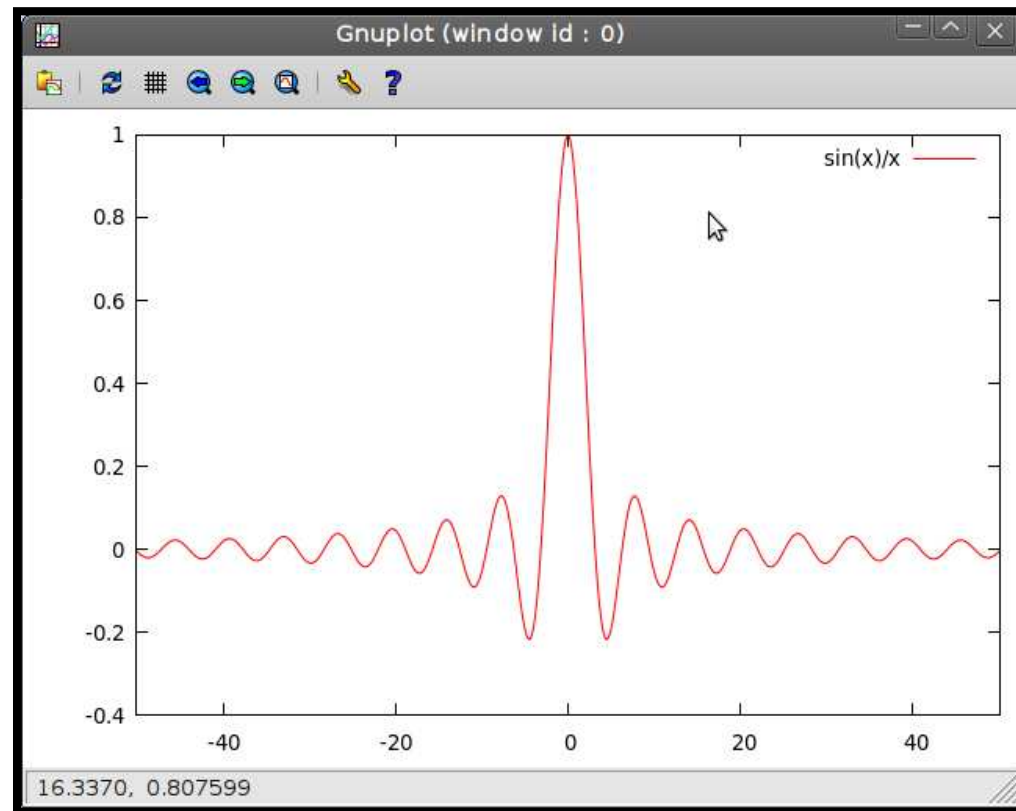
```
gnuplot> plot sin(x)/x
```



Plot Sinc Function - $\sin(x)/x$

- Adding more **sample points**

```
gnuplot> set samples 2000  
gnuplot> plot sin(x)/x
```



Plot graph from text file

- File "data1.dat" contains:

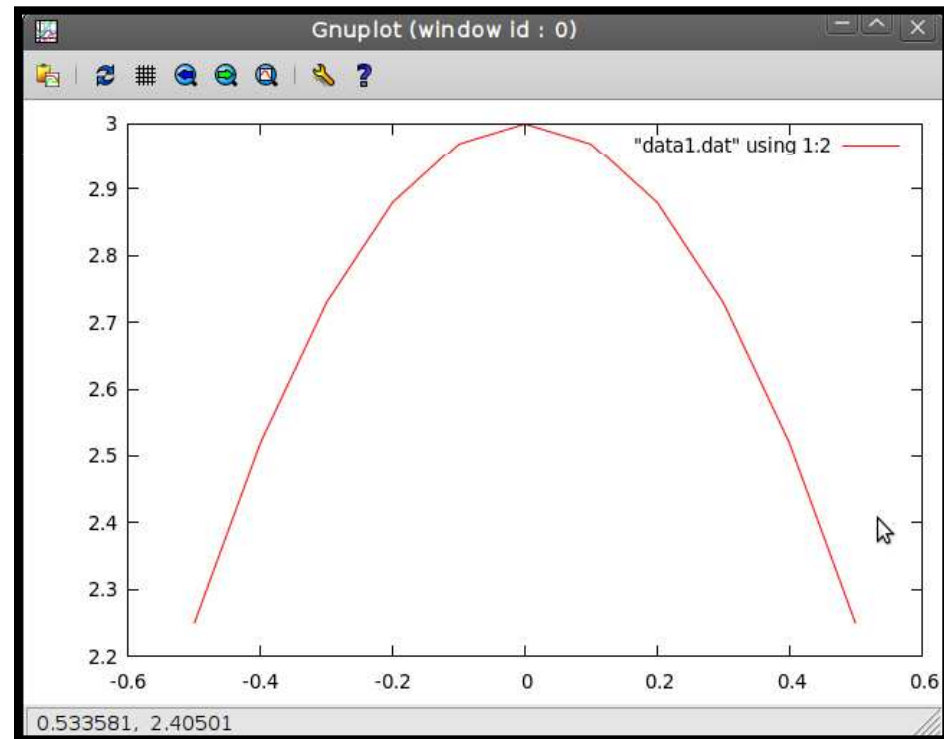
X	Y1	Y2	Y3
-0.5000	2.2500	1.2990	-0.1250
-0.4000	2.5200	1.0998	-0.2600
-0.3000	2.7300	0.8585	-0.3650
-0.2000	2.8800	0.5879	-0.4400
-0.1000	2.9700	0.2985	-0.4850
0.0000	3.0000	-0.0000	-0.5000
0.1000	2.9700	-0.2985	-0.4850
0.2000	2.8800	-0.5879	-0.4400
0.3000	2.7300	-0.8585	-0.3650
0.4000	2.5200	-1.0998	-0.2600
0.5000	2.2500	-1.2990	-0.1250

Plot graph from text file: (X, Y1)

```
gnuplot> plot "data1.dat" using 1:2 with line
```

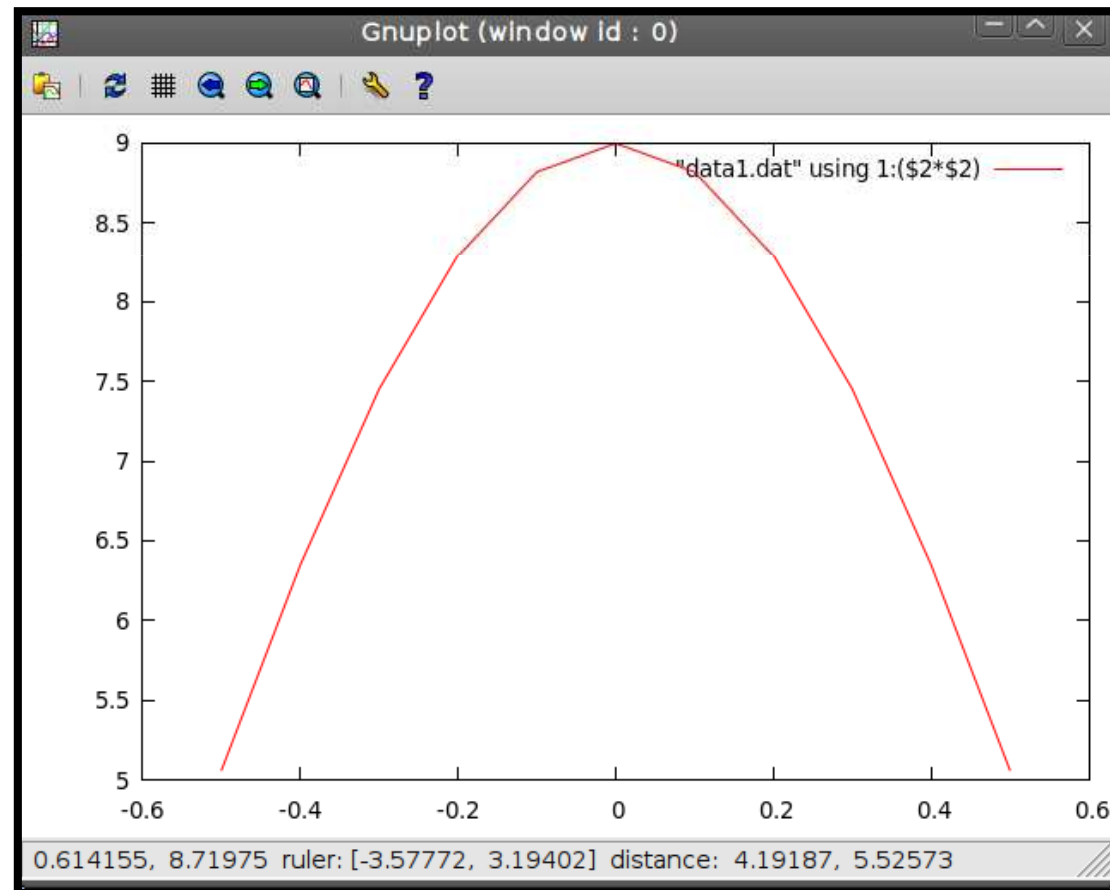
1 2 3 4

X	Y1	Y2	Y3
-0.5000	2.2500	1.2990	-0.1250
-0.4000	2.5200	1.0998	-0.2600
-0.3000	2.7300	0.8585	-0.3650
-0.2000	2.8800	0.5879	-0.4400
-0.1000	2.9700	0.2985	-0.4850
0.0000	3.0000	-0.0000	-0.5000
0.1000	2.9700	-0.2985	-0.4850
0.2000	2.8800	-0.5879	-0.4400
0.3000	2.7300	-0.8585	-0.3650
0.4000	2.5200	-1.0998	-0.2600
0.5000	2.2500	-1.2990	-0.1250



Plot graph from text file: $(X, Y1^2)$

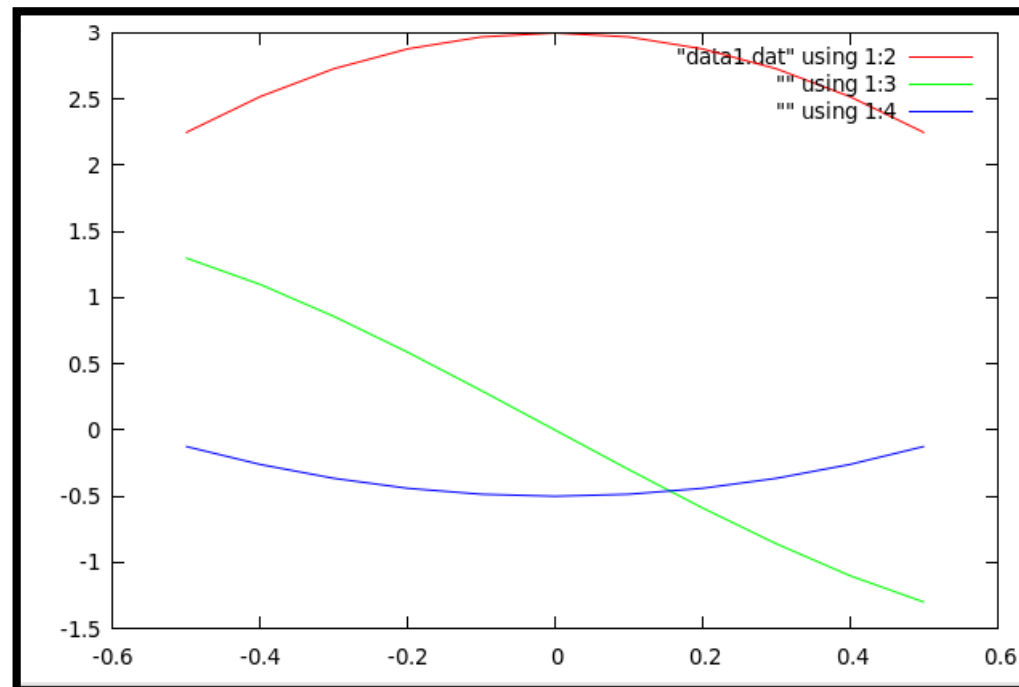
```
gnuplot> plot "data1.dat" using 1:($2*$2) with line
```



Plot graph from text file

- Plot: (X, Y1) (X, Y2) and (X, Y3)

```
gnuplot> plot "data1.dat" using 1:2 with line, \  
             "data1.dat" using 1:3 with line, \  
             "" using 1:4 with line
```



Save the output to file

- Supported Output File Formats

- postscript
- jpeg
- png
- gif
- ...

- Help

- `gnuplot> help set term`

```
`startup` file is pushed automatically. Therefore portable scripts d
that `set term pop` restores the default terminal on a given platfor
another terminal has been pushed explicitly.

For a complete list of available terminal types, see `terminal`.

Subtopics available for set term:
aed512      aed767      aifm        bitgraph
cgm         corel       dumb        dxf
eepic      emf         emtex       epslatex
epson-180dpi  epon-60dpi  epon-lx800  fig
gif         gpic       hp2623a     hp2648
hp500c     hpdj       hpgl        hpljii
hppj       imagen     jpeg        kc-tek40xx
km-tek40xx latex       mf          mif
mp         nec-cp6    okidata     pbm
pcl5       png        pop         postscript
pslatex   pstex     pstricks    push
Press return for more: |
```

Save the output to file: jpeg

- Save the output to "example3.jpg"

```
gnuplot> set samples 2000
```

```
gnuplot> set xrange [-50:50]
```

```
gnuplot> plot sin(x)/x
```

```
gnuplot> set term jpeg
```

```
gnuplot> set output "example3.jpg"
```

```
gnuplot> replot
```

- Restore back to normal plot (plot on screen)

```
gnuplot> set term wxt
```

Summary

- **plot** "data1.dat" using 1:2 w l
- set **xrange** [0:100]
- set **yrange** [0:60]
- set **xlabel** "x value"
- set **ylabel** "y value"
- set **title** "graph1"
- set **xtics** 1.5
- set **ytics** 20
- set **samples** 2000
- **replot**

Summary

- set **term** jpeg
- set **output** "example3.jpg"

Other related commands, please follow the link in the references.

References

- <http://www.gnuplot.info/>
- <http://t16web.lanl.gov/Kawano/gnuplot/index-e.html>
- <http://www.gnuplot.info/screenshots/index.html#screenshots>