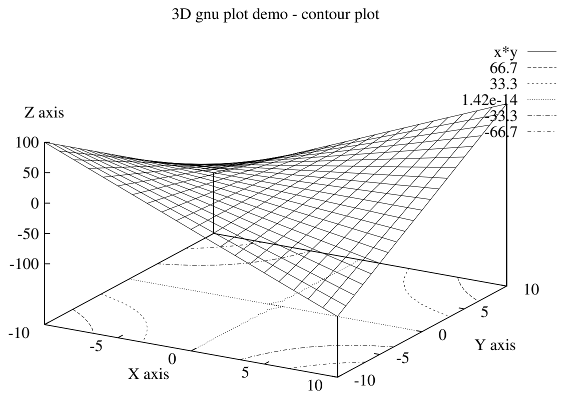
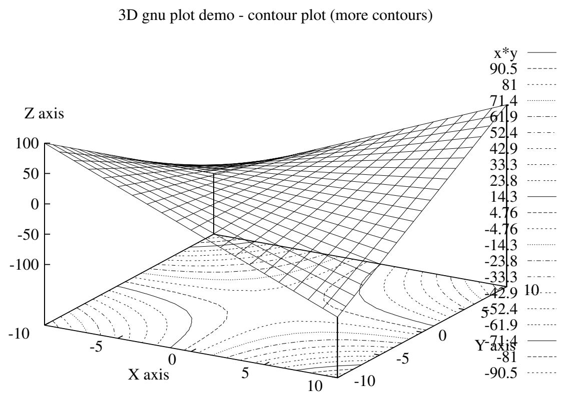
gnuplot contour plot demo

Nicolas Brouard and Alex Woo

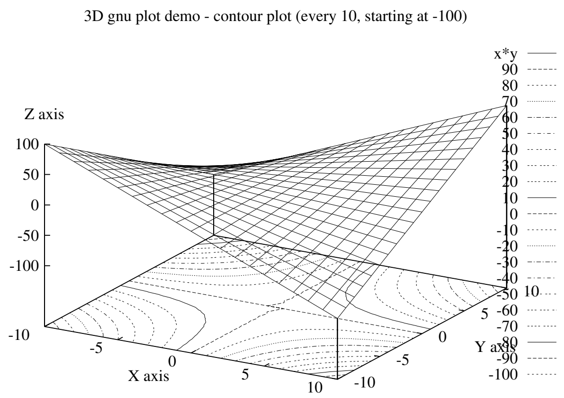
```
set samples 20
set isosamples 21
set nogrid
set xlabel "X axis"
set ylabel "Y axis"
set zlabel "Z axis"
set title "3D gnu plot demo - contour plot"
set contour

splot x*y
```



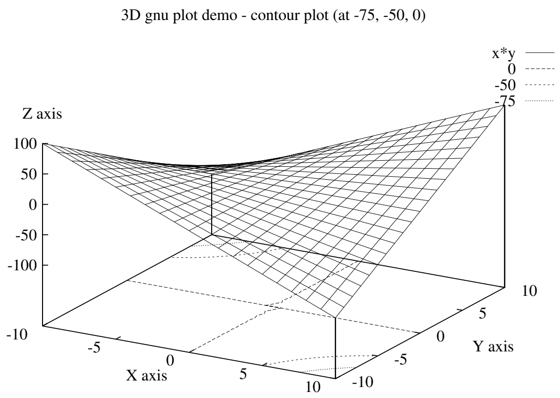
```
set cntrparam levels 20
set title "3D gnu plot demo - contour plot (more contours)"

replot
```



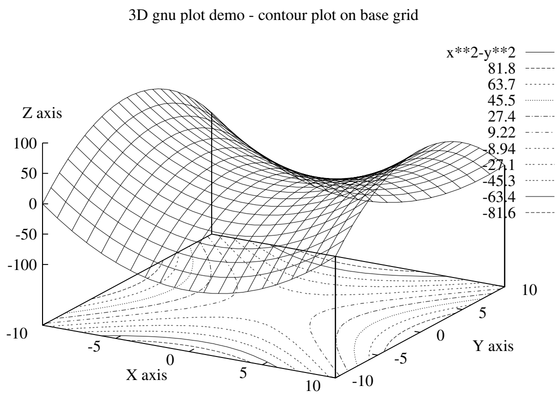

```
set cntrparam levels incr -100,10,100
set title "3D gnu plot demo - contour plot (every 10, starting at -100)"

replot
```



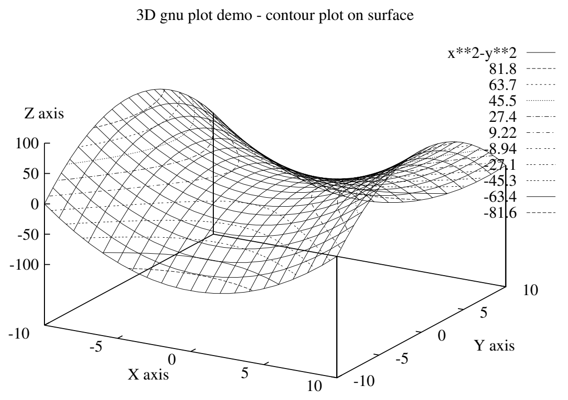
```
set cntrparam levels disc -75,-50,0
set title "3D gnu plot demo - contour plot (at -75, -50, 0)"

replot
```



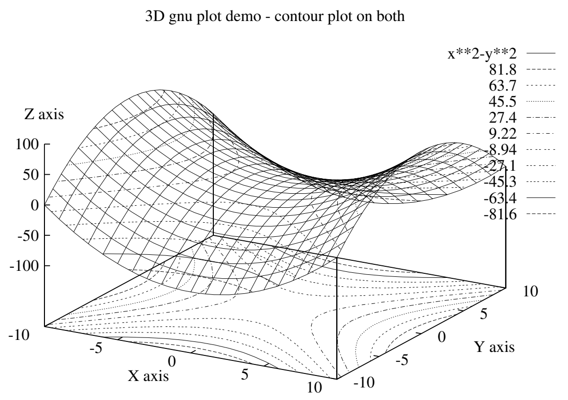

```
set cntrparam levels auto 10
set title "3D gnu plot demo - contour plot on base grid"
set contour base

splot x**2-y**2
```



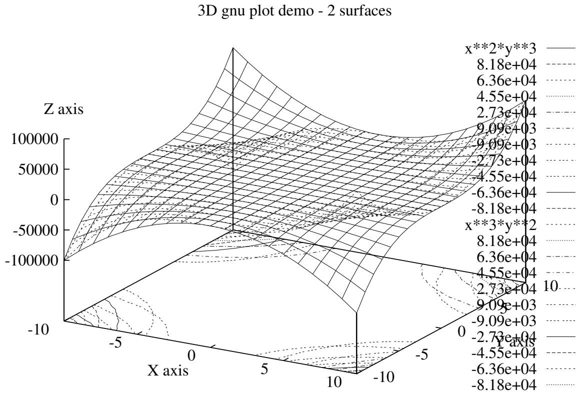
```
set title "3D gnu plot demo - contour plot on surface"
set contour surface

replot
```



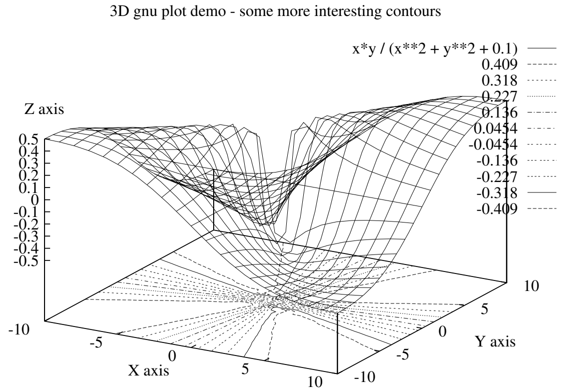

```
set title "3D gnu plot demo - contour plot on both"
set contour both

replot
```



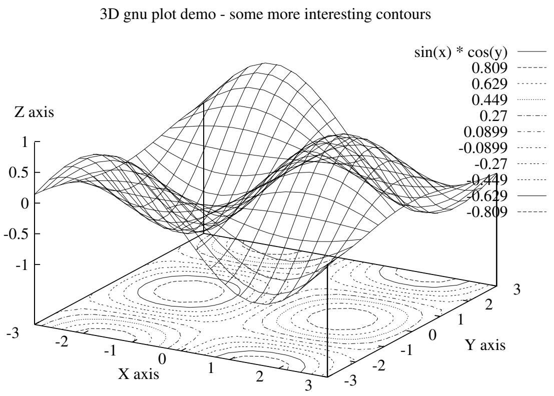
```
set contour base
set title "3D gnu plot demo - 2 surfaces

splot x**2*y**3, x**3*y**2
```



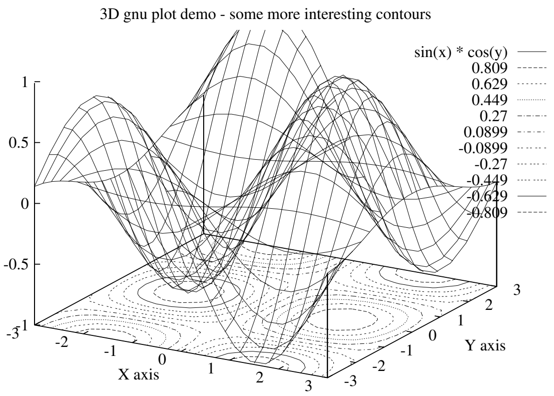

```
set title "3D gnu plot demo - some more interesting contours"

splot x*y / (x**2 + y**2 + 0.1)
```



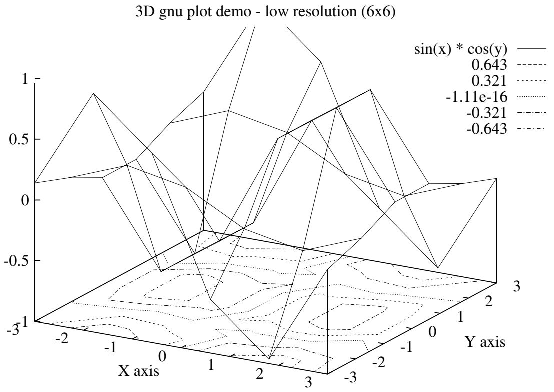
```
splot [x=-3:3] [y=-3:3] sin(x) * cos(y)
```



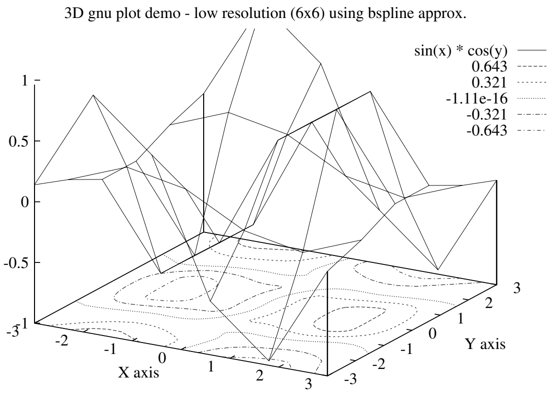

```
set zrange [-0.5:0.5]

replot
```



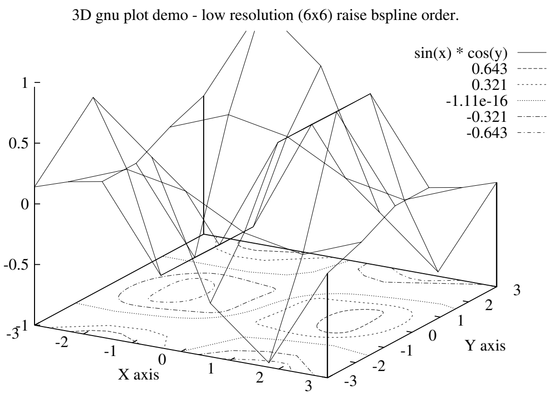
```
set samples 6
set isosamples 6
set cntrparam levels 5
set title "3D gnu plot demo - low resolution (6x6)"

replot
```



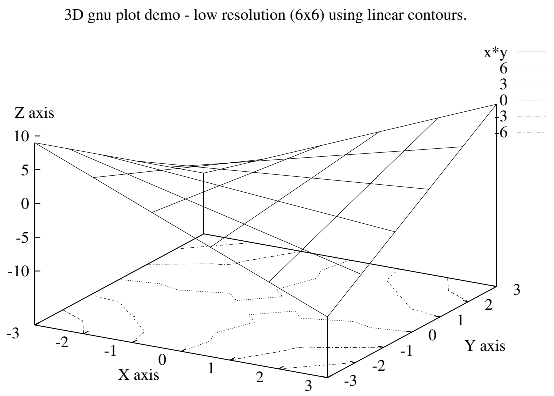

```
set cntrparam bspline
set title "3D gnu plot demo - low resolution (6x6) using bspline approx."

replot
```



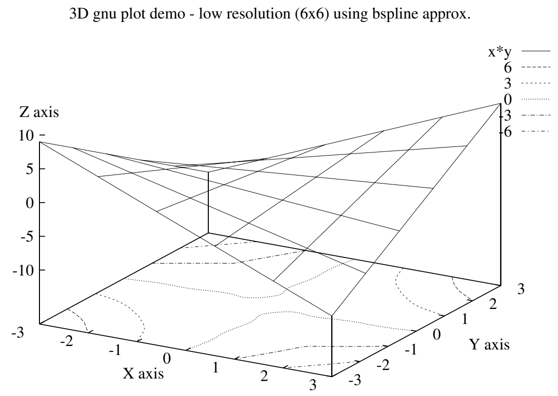
```
set cntrparam order 8
set title "3D gnu plot demo - low resolution (6x6) raise bspline order."

replot
```



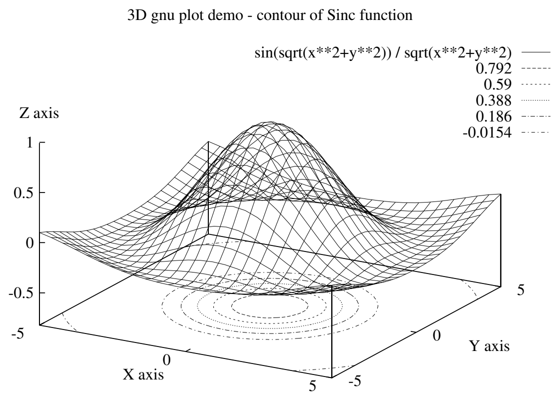

```
set cntrparam linear
set auto
set title "3D gnu plot demo - low resolution (6x6) using linear contours."

splot x*y
```



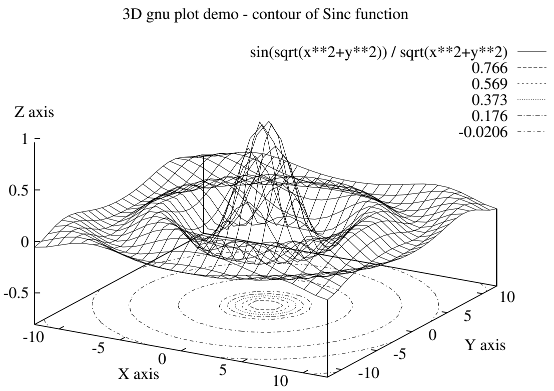
```
set cntrparam order 4
set cntrparam bspline
set title "3D gnu plot demo - low resolution (6x6) using bspline approx."

replot
```



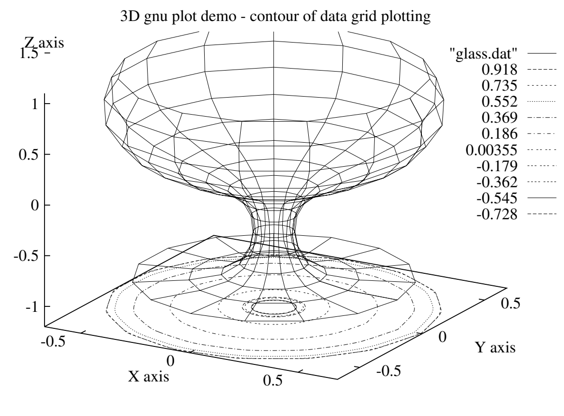

```
set samples 25
set isosamples 26
set title "3D gnu plot demo - contour of Sinc function"

splot [-5:5.01] [-5:5.01] sin(sqrt(x**2+y**2)) / sqrt(x**2+y**2)
```



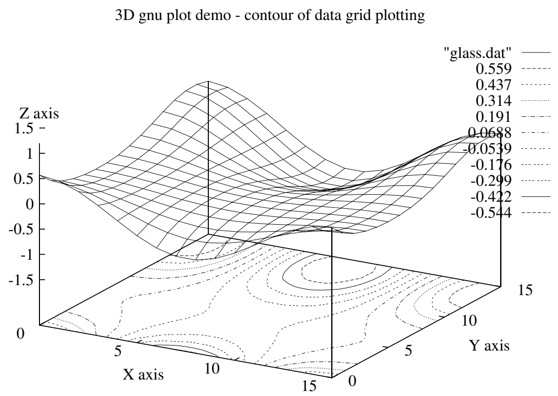
```
splot [-12:12.01] [-12:12.01] sin(sqrt(x**2+y**2)) / sqrt(x**2+y**2)
```



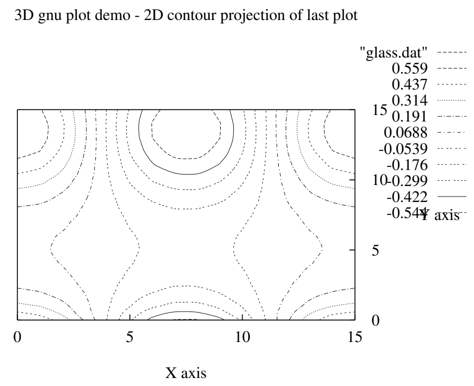

```
set cntrparam levels 10
set xrange [0:15]
set yrange [0:15]
set auto
set zrange [-0.6:0.6]
set data style lines
set title "3D gnu plot demo - contour of data grid plotting"
set parametric

splot "glass.dat"
```



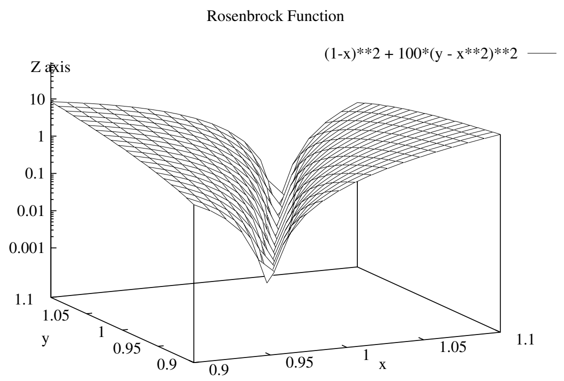
```
set zrange [-1.2:1.2]
set noparametric

splot "glass.dat" using 1
```



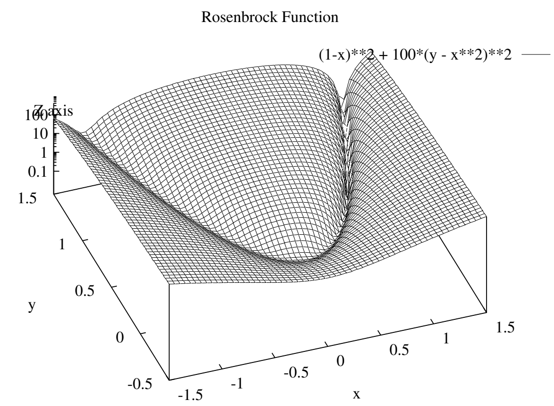

```
set view 0,0,1
set nosurface
set title "3D gnu plot demo - 2D contour projection of last plot"

replot
```



```
From: shen@athena.cs.uga.edu (Mingzuo Shen)
Subject: Rosenbrock's function: some answers and thanks
Date: Wed, 23 Jun 1993 20:50:36 GMT

    Last night I asked for help with a contour plot for the function:

    (1-x)**2 + 100 * (y - x**2)**2

which should have a minimum at (x=1,y=1). This is the 2D case of a more
general function named after Rosenbrock (the book I am reading does not
give a reference to any paper/book by this person):

    for even integer n,

    f(x) = \sum_{j=1,3,5,\ldots,n} [(1 - x_j)^2 + 100(x_{j+1} - x_j^2)^2]

where x is a vector (x1, x2, ..., x_n). This function also have a minimum
at (1,1,...,1), which lies at the base of a "banana-shaped valley".
Here are the new commands I have tried.

set auto
set surface
set nocontour
set cntrparam levels 5
set cntrparam linear
set samples 100
set logscale z
set hidden3d
set isosamples 20
set view 70,335,1
set xlabel "x"
set ylabel "y"
set title "Rosenbrock Function"

splot [0.9:1.1] [0.9:1.1] (1-x)**2 + 100*(y - x**2)**2
```



```
set logscale z
set hidden3d
set isosamples 60
set view 20,340,1,2
set xlabel "x"
set ylabel "y"

splot [-1.5:1.5] [-0.5:1.5] (1-x)**2 + 100*(y - x**2)**2
```




```
set contour
set nosurface

replot
```