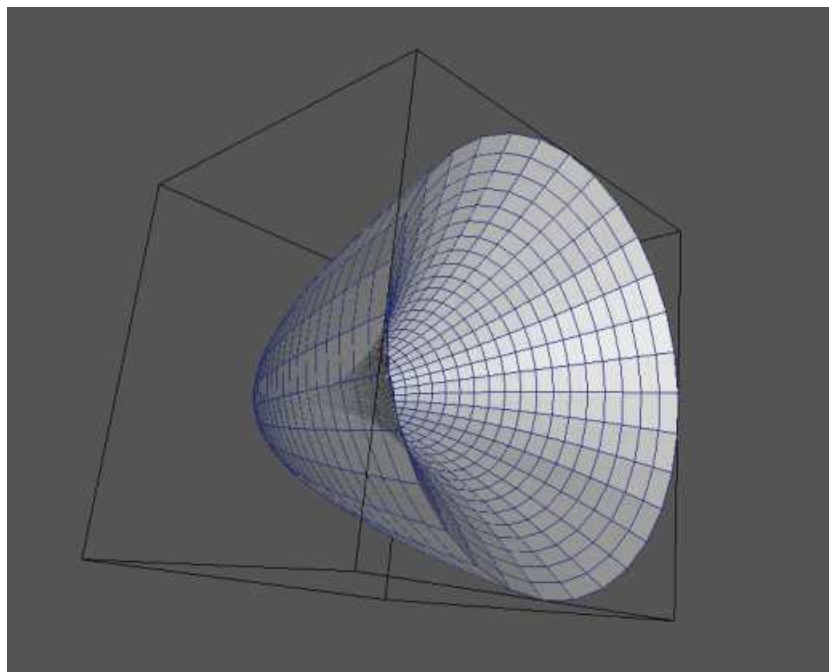


This document recreates the Maple worksheet done for Honors Calculus II class on January 25, 2010 using the free software texmacs, geomview and Maxima running on Linux.

```
Maxima 5.13.0 http://maxima.sourceforge.net
Using Lisp GNU Common Lisp (GCL) GCL 2.6.7 (aka GCL)
Distributed under the GNU Public License. See the file COPYING.
Dedicated to the memory of William Schelter.
```

The following plot command visualizes the volume of revolution of the area between the curves  $x = y^2$  and  $y = x^2/8$ . The output from maxima is sent to the files outer.gv and inner.gv which are then displayed using geomview for 3D visualization. Note that scaling must be turned off using the ON command.

```
(%i1) plot3d([y^2,y*cos(theta),y*sin(theta)],
            [y,0,2],[theta,0,2*%pi],
            [plot_format,geomview],[run_viewer,false])$
system("mv ~/maxout.geomview outer.gv")$
(%i17) plot3d([x,1/8*x^2*cos(theta),1/8*x^2*sin(theta)],
            [x,0,4],[theta,0,2*%pi],
            [plot_format,geomview],[run_viewer,false])$
system("mv ~/maxout.geomview inner.gv")$
(%i19) system("geomview outer.gv inner.gv &")$
```



The following integrals illustrate finding the volume of revolution by the cylinder and disk methods.

```
(%i20) integrate((sqrt(8*y)-y^2)*2*%pi*y,y,0,2);
(%o8) 24 pi / 5
(%i9) integrate(%pi*(x-1/64*x^4),x,0,4);
(%o9) 24 pi / 5
(%i10)
```