Math. 2673 Final Project Fall,2005 Teams of at most 2. Due Wednesday 10 a.m. of Finals week.

I. Answer the following:

Consider the following objects:
A cylinder whose radius is 1 and height is 2 and a sphere whose radius is 1.

I.) Using Maple, graph each of the objects in any coordinate systems. Hence 2 graphs.

II.) Find the volume of each object using each of the 3 coordinate systems i.e 6 problems. Use Maple to evaluate the integral. Be sure to check your work.

III. Graph and find the volume of the following in Maple only:

1.) Find the volume inside the paraboloid $z = (x^2 + y^2)$ and below the plane $z = 1$.

2.) Find the volume inside both the sphere $x^2 + y^2 + z^2 = 2$ and the paraboloid $z = x^2 + y^2$.

3.) The volume bounded by the cone whose angle in spherical coordiantes is given by $\phi = \frac{\pi}{4}$ and a sphere of radius 1.

4.) The solid in the first octant volume bounded by the cylinder $z^2 + y^2 = 9$ and $z = x^2 + 3y^2$