

DPGRAPH Assignment #3 - Math 260 – Towers

The purpose of this exercise is to use DPGRAPH to plot examples of the quadric surfaces.

1. Open the file m260_problem3.dpg, which is available at my website <http://www.miracosta.edu/home/jtowers/>. You should see the graph of an ellipsoid, along with three very slim cylinders, which are intended to represent the coordinate axes. An ellipsoid is an example of a quadric surface.
2. Make a plot of the ellipsoid $x^2/4 + y^2/9 + z^2/16 = 1$. Print it out. On the same sheet of paper as the plot, sketch by hand the traces in the xy -plane, the yz -plane, and the xz -plane.
3. Repeat step 2, except with the hyperboloid of one sheet $x^2/4 + y^2/9 - z^2/16 = 1$.
4. Repeat step 2, except with the hyperboloid of two sheets $z^2/4 - x^2/9 - y^2/16 = 1$. On this one, sketch an additional trace, specifically the trace on the plane $z = 8$.
5. Repeat step 2, except with the elliptic cone $x^2/4 + y^2/9 - z^2/16 = 0$. On this one, sketch an additional trace, specifically the trace on the plane $z = 4$.
6. Repeat step 2, except with the elliptic paraboloid $z = x^2/4 + y^2/9$. On this one, sketch an additional trace, specifically the trace on the plane $z = 1$.
7. Repeat step 2, except with the hyperbolic paraboloid $z = x^2/4 - y^2/9$.

Notes:

1. What you see when you originally open the dpgraph file m260_problem3.dpg should look something like this:



