

### Problem 3

Obtain a plot showing the hyperboloid

$$\frac{x^2}{9} + \frac{y^2}{16} - \frac{z^2}{25} = 1$$

together with its tangent plane at the point (3,4,5).

### Problem 4

Obtain a plot showing the ellipsoid

$$\frac{x^2}{4} + \frac{y^2}{9} + z^2 = 3$$

together with its tangent plane at the point (2,3,1).

### Problem 5

Find the equation of the tangent plane to the surface  $x*y*z = 8$  at the point  $(-2, -2, 2)$  in two different ways: by thinking of the surface as a graph of a function of two variables, and also by thinking of the surface as a level surface of a function of three variables. Check that your two answers agree. Then plot the surface (in a vicinity of this point) along with the tangent plane, so that the tangency is visible (you need only do this once).