



3. Find an equation of the plane through  $(1, 2, -2)$  that contains the line  $x = 2t, y = 3 - t, z = 1 + 3t$ .

4. Find the point in which the line with parametric equations  $x = 2 - t, y = 1 + 3t, z = 4t$  intersects the plane  $2x - y + z = 2$ .

5. Identify and sketch the graph of the surface  $x = y^2 + z^2$ .

6. The cylindrical coordinates of a point are  $(2\sqrt{3}, \pi/3, 2)$ . Find the rectangular and spherical coordinates of the point.

7. Find parametric equations for the line through the point  $(0,1,2)$  that is parallel to the plane  $x + y + z = 2$  and perpendicular to the line  $x = 1 + t, y = 1 - t, z = 2t$ .

8. a) Find the point at which the given lines intersect.  
b) Find an equation of the plane that contains these lines.

$$r = \langle 1, 1, 0 \rangle + t \langle 1, -1, 2 \rangle$$

$$s = \langle 2, 0, 2 \rangle + s \langle -1, 1, 0 \rangle$$