Problem 1

Draw the figure in 3-space described by the equations

$$x^2 + y^2 = 1, \quad z = 3$$

Problem 2

Draw the figure in 3-space described by the equation

$$x = y \quad \text{no restriction on } z$$

Problem 3

Draw the figure in 3-space described by the inequalities

$$0 \leq x \leq 1, \quad 0 \leq y \leq 1, \quad 0 \leq z \leq 1$$

Problem 4

Give the equations of a circle of radius 2 centered about the origin, that lies in the yz-plane.

Problem 5

Plot the points $(-1, 1, 5)$ and $(2, 5, 3)$, draw the line segment which connects them and compute its distance.

Problem 6

Give the equation of a sphere of radius 4 centered at the point $(-1, 1, 3)$.

Problem 7

The following is an equation is that of a sphere. Determine its radius and center.

$$x^2 + 2x + y^2 - 4y + z^2 - 6z = -13$$