

## Homework Section 12.2

1. Identify and sketch the graph of the quadric surface.

a)  $\frac{x^2}{4} + \frac{y^2}{9} + \frac{z^2}{16} = 1$

b)  $x = y^2 + \frac{z^2}{4}$

c)  $z^2 = 1 + \frac{x^2}{4} + \frac{y^2}{9}$

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

e)  $z = \frac{y^2}{16} - \frac{x^2}{9}$

f)  $y^2 + \frac{z^2}{9} - x^2 = 1$

2. Use the method of completing the square to identify the quadric surface represented by the given equation:

a)  $y^2 + z^2 + 4x + 4y - 10z + 29 = 0$ .

b)  $x^2 + y^2 + z^2 - 8x + 4y - 14z = -44$

3. Draw the space region in the first octant bounded by the plane  $z = 2 - y$ , the cylinder  $x = 4 - y^2$ , and the three coordinate planes.

4. Draw the space region bounded by the surfaces  $z = 4 - (x^2 + y^2)$  and  $z = 0$ .