1. Parametrize and give bounds for the portion of the paraboloid  $z = x^2 + y^2$  lying above the rectangle with vertices (0,0), (2,0), (2,3), and (0,3).

2. Parametrize and give bounds for the portion of the cylinder with radius 4 centered around the z-axis between z = 2 and z = 10.

3. Parametrize and give bounds for the portion of the plane z = 12 that lies within the cylinder with equation  $x^2 + y^2 = 16$ .

1. Parametrize and give bounds for the rectangle with vertices (3,0,0), (3,2,0), (3,2,5), and (3,0,5).

2. Parametrize and give bounds for the right half (i.e. the portion with positive y coordinates) of the cylinder with radius a and centered on the x-axis between x = 0 and x = 5.

3. Parametrize and give bounds for the portion of the plane x = 12 that lies within the cylinder with equation  $y^2 + z^2 = r^2$ .