

**Name:** \_\_\_\_\_ **Section:** 201 (starts at 08:00)  
202 (starts at 09:35)

1. (3 points) A box has dimensions 3 by 4 by 12 inches. How long is its longest diagonal?
2. (3 points) Describe the shape defined by the equation

$$z^2 + y^2 = 1$$

(in coordinates  $x, y, z$ ).

3. (4 points) Find the center and the radius of the sphere described by the equation

$$x^2 - 4x + y^2 - 6y + z^2 - 2z + 10 = 0$$

4. (5 points extra credit) What shape is described by the equation  $z = \pm\sqrt{xy}$ ?