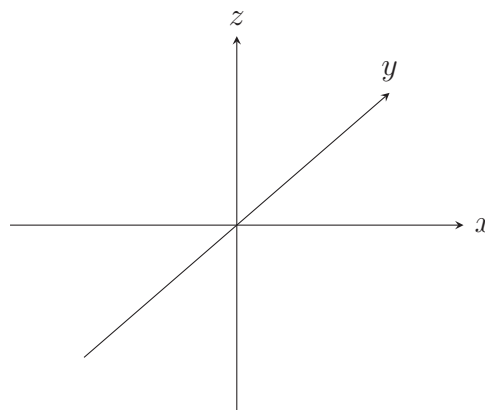


Math 253 GWS 18 - 9.7 Cylindrical and Spherical Coordinates

Name: _____

1. Plot the point whose cylindrical coordinates are given. Then find the rectangular coordinates of the point.

a. $(2, \frac{\pi}{4}, 1)$



b. $(4, -\frac{\pi}{3}, 5)$

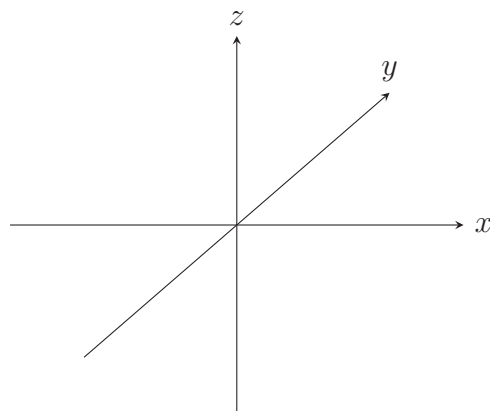
2. Change the following points from rectangular to cylindrical coordinates.

a. $(1, -1, 4)$

b. $(-1, -\sqrt{3}, 2)$

3. Plot the point whose spherical coordinates are given. Then find the rectangular coordinates of the point.

a. $(2, \frac{\pi}{3}, \frac{\pi}{4})$



b. $(3, 0, \frac{3\pi}{4})$

4. Change from rectangular to spherical coordinates.

a. $(1, \sqrt{3}, 2\sqrt{3})$

b. $(0, -1, -1)$

5. Describe in words the surface whose equation is given by $\phi = \frac{\pi}{3}$.

6. Identify the surface whose equation is given.

a. $r = 2 \cos(\theta)$

b. $\rho \sin(\phi) = 2$

7. Write the equation in (a) cylindrical coordinates and (b) spherical coordinates.

a. $x^2 + y^2 + z^2 = 2$

b. $3x + 2y + z = 6$

8. Sketch the solid described by the given inequalities

a. $0 \leq r \leq 2$ $-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$ $0 \leq z \leq 1$

b. $2 \leq \rho \leq 3$ $\frac{\pi}{2} \leq \phi \leq \pi$

