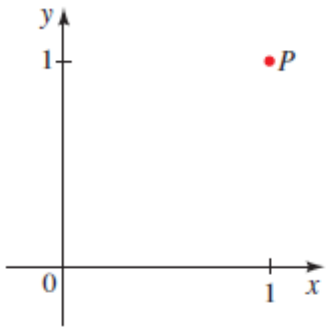
2.5 Polar Graphs

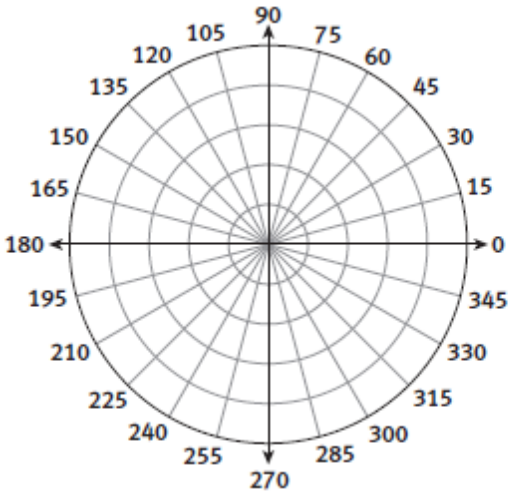
Practice Tasks

I. Concepts and Procedures

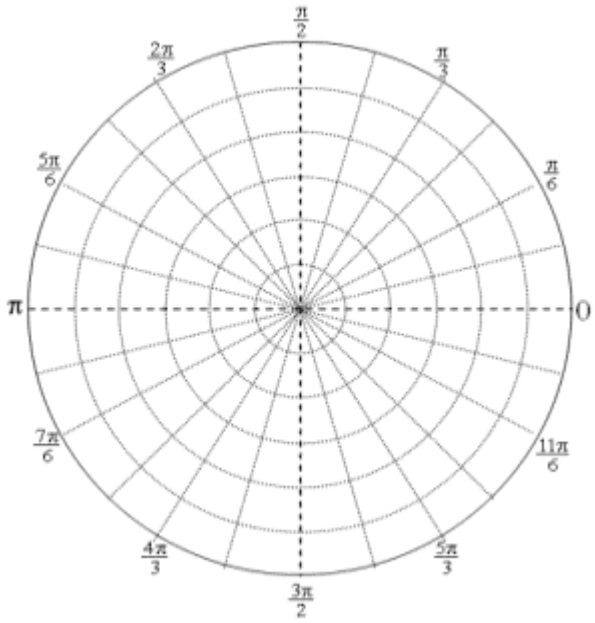
1. We can describe the location of a point in the plane using different coordinate systems. The point *P* shown in the figure below has *rectangular* coordinates (____, ____) and *polar* coordinates (____, ____).



2. Plot and labels the points given by the polar coordinates:
   a. (2, -30°)
   b. (-3, 120°)
   c. (2, 195°)
   d. (-2, -150°)
   e. (0, 270°)



3. Plot and labels the points given by the polar coordinates:



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

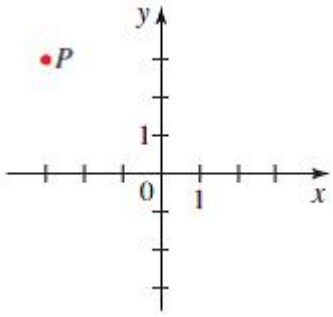
b. $(6\ ,\ -\frac{7\pi}{6})$

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

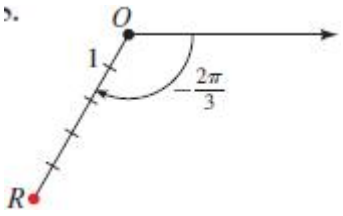
d. $(3\ ,\ \frac{\pi}{2})$

e. $(-1\ ,\ \frac{7\pi}{6})$

4. A point is graphed in rectangular form. Find polar coordinates for the point, with $r > 0$ and $0 < \theta < 2\pi$



5. A point is graphed in polar form. Find the rectangular coordinates.



6. Find the rectangular coordinates for the point whose polar coordinates are given.
   a. $(4, 250°)$
   b. $(-6, -120°)$
   c. $(4, \frac{\pi}{6})$
   d. $(\sqrt{2}, -\frac{\pi}{4})$

7. Convert the rectangular coordinates to polar coordinates with $r > 0$ and $0 < \theta < 2\pi$.
   a. $(-1, 1)$
   b. $(\sqrt{8}, \sqrt{8})$
   c. $(-6, 0)$

8. Convert the equation to polar form.
   a. $x = y$
   b. $x = 4$

II. Modeling

1. Describe a situation that does not involve airplanes where polar coordinates would be useful. Create and solve a real-word problem using polar coordinates.