

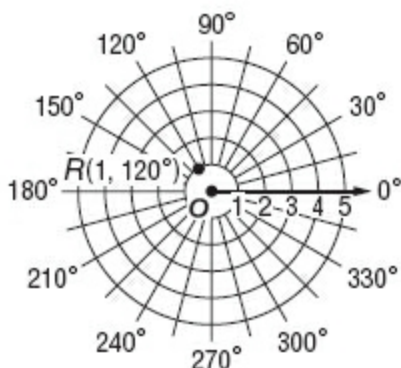
## 9-1 Polar Coordinates

Graph each point on a polar grid.

1.  $R(1, 120^\circ)$

**SOLUTION:**

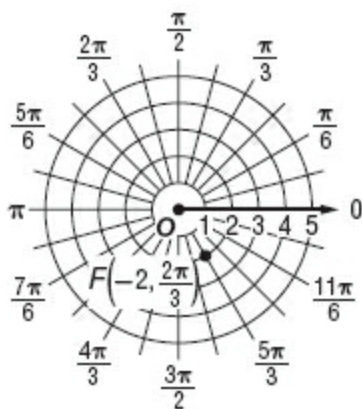
Because  $\theta = 120^\circ$ , locate the terminal side of a  $120^\circ$  angle with the polar axis as its initial side. Because  $r = 1$ , plot a point 1 unit from the pole along the terminal side of the angle.



3.  $F\left(-2, \frac{2\pi}{3}\right)$

**SOLUTION:**

Because  $\theta = \frac{2\pi}{3}$ , locate the terminal side of a  $\frac{2\pi}{3}$  angle with the polar axis as its initial side. Because  $r = -2$ , plot a point 2 units from the pole in the opposite direction of the terminal side of the angle.



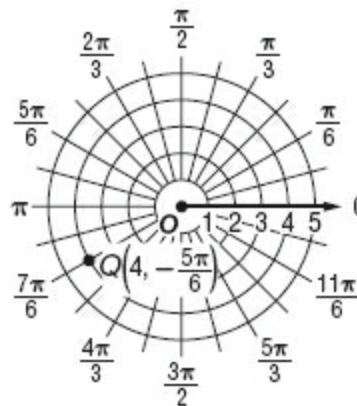
5.  $Q\left(4, -\frac{5\pi}{6}\right)$

**SOLUTION:**

Because  $\theta = -\frac{5\pi}{6}$ , locate the terminal side of a  $-\frac{5\pi}{6}$  angle with the polar axis as its initial side.

$$-\frac{5\pi}{6} + 2\pi = \frac{7\pi}{6}$$

Because  $r = 4$ , plot a point 4 units from the pole along the terminal side of the angle.



Graph each polar equation.

23.  $r = 4$

**SOLUTION:**

The solutions of  $r = 4$  are ordered pairs of the form  $(4, \theta)$ , where  $\theta$  is any real number. The graph consists of all points that are 4 units from the pole, so the graph is a circle centered at the origin with radius 4.



## 9-1 Polar Coordinates

27.  $\theta = -15^\circ$

*SOLUTION:*

The solutions of  $\theta = -15^\circ$  are ordered pairs of the form  $(r, -15^\circ)$ , where  $r$  is any real number. The graph consists of all points on the line that make an angle of  $-15^\circ$  with the positive polar axis.

