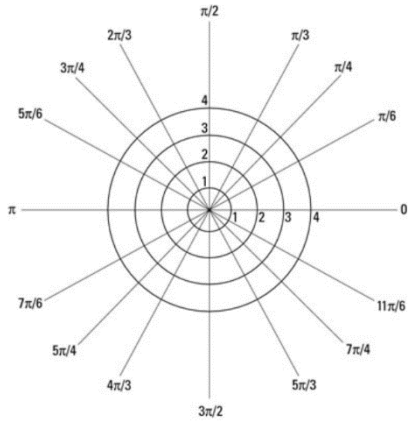
DATE: _____

# Polar Coordinates

$(r, \theta)$



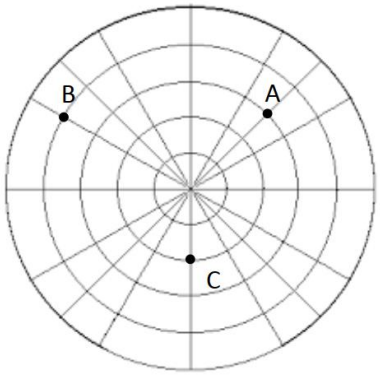

$(r, \theta)$

The polar coordinates of point A is $\left(3, \frac{\pi}{4}\right)$.

*Example 1:* Identify the coordinates of:

**a)** point B

**b)** point C

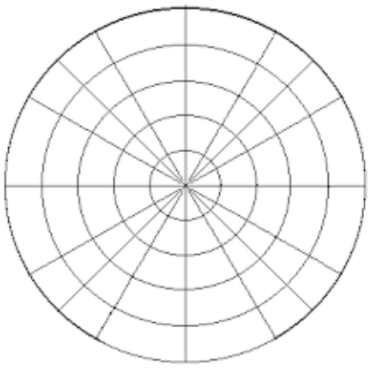



*Example 2:* Plot each of the given points:

**a)** D $(5, \pi)$

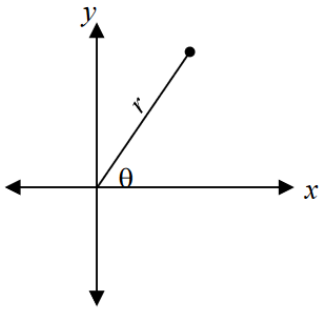
**b)** E $\left(-2, \frac{\pi}{3}\right)$

**c)** F $\left(3.5, -\frac{\pi}{6}\right)$

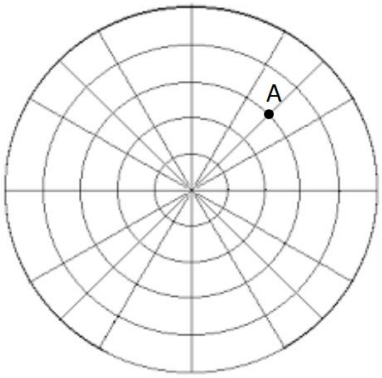


## Convert Polar Coordinates to Rectangular Coordinates

$(r, \theta) \rightarrow (x, y)$



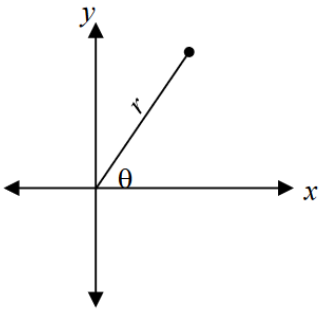

*Example 3:*
Determine the rectangular $(x, y)$ coordinates of point A.




*Example 4:*
Convert $\left(2, \frac{5\pi}{6}\right)$ to rectangular coordinates.

## Convert Rectangular Coordinates to Polar Coordinates

$(x, y) \rightarrow (r, \theta)$

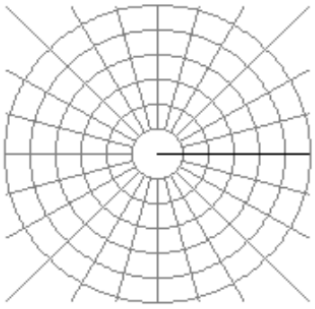



*Example 5:*
Convert $\left(3\sqrt{2}, 3\sqrt{2}\right)$ to polar coordinates.

# Sketching Polar Curves Using TI-Nspire

Use a TI-Nspire to sketch a graph of the polar equations:

**1.** $r = 4\cos\theta$



**2.** $r = 3\sin 2\theta$