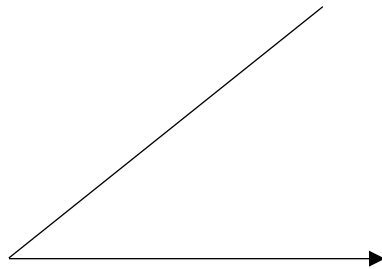


Lesson 8.1: Polar Coordinates

What are Polar Coordinates?

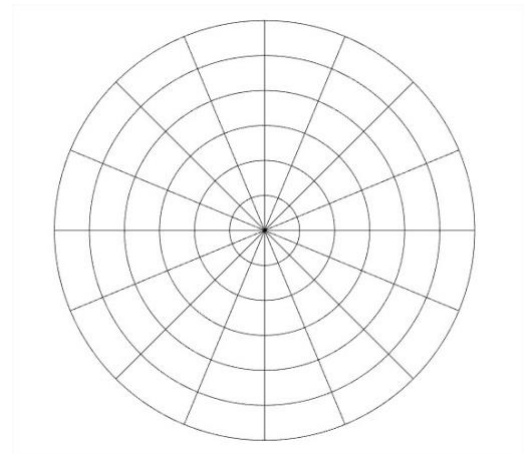
The **polar coordinate system** uses _____ and _____ to specify the location of point on a plane.

Setting Up a Polar Plane



Examples: Plot the points whose polar coordinates are given on the same polar grid.

1. $\left(1, \frac{3\pi}{4}\right)$
2. $\left(3, -\frac{\pi}{6}\right)$
3. $\left(-4, \frac{\pi}{4}\right)$



The Relationship Between Polar and Rectangular Coordinates

Examples: Convert the following coordinates from polar to rectangular or vice versa.

1. $\left(4, \frac{2\pi}{3}\right)$

2. $(2, -2)$

Examples: Convert the following equations from polar to rectangular or vice versa.

1. $x^2 = 4y$

2. $r = 5 \sec(\theta)$

3. $r = 2 + 2\cos(\theta)$