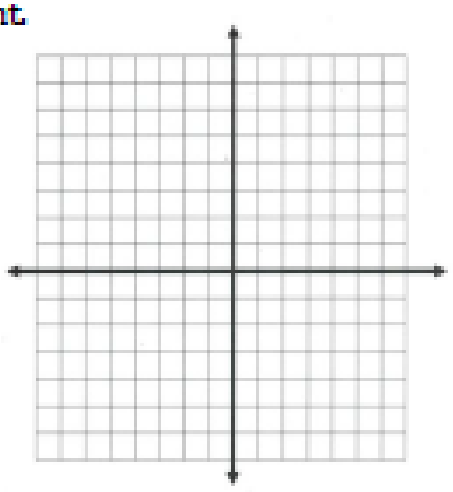
Unit #4: Parametric and Polar Equations
Topic: Graphing Polar Coordinates
Objective: SWBAT graph polar coordinates using their knowledge of the unit circle.

Warm Up #2:

Sketch each of the following angles in the correct quadrant.

a) $\frac{7\pi}{6}$ b) $-\frac{5\pi}{3}$



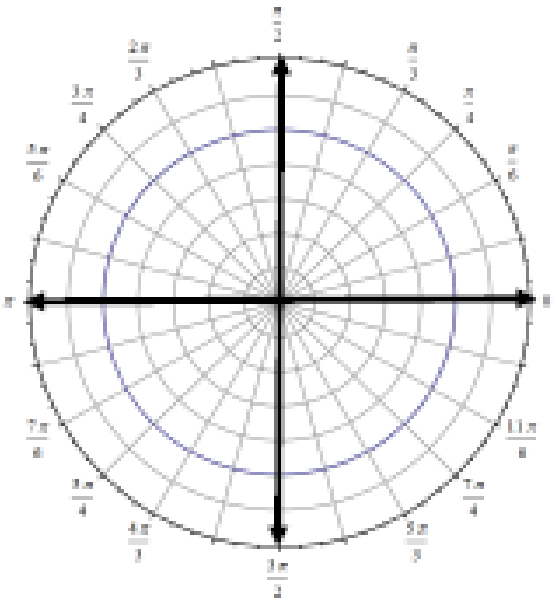
c) $\frac{9\pi}{4}$ d) $-\frac{3\pi}{4}$

Rectangular coordinates, (x, y), are useful for expressing functions of y in terms of x. Curves that are not functions are often more easily expressing in an alternative coordinate system called polar coordinates.

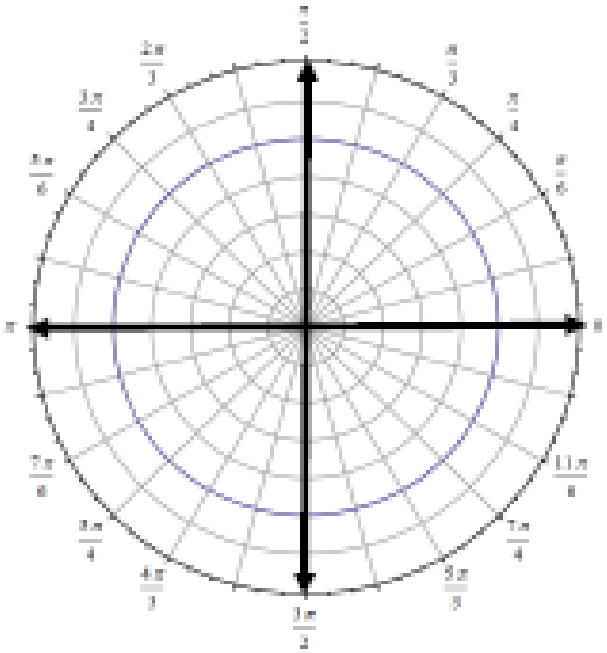
A polar coordinate system has the traditional x and y- axes where the intersection of these axes, the old origin, is now called the pole. Then each point in the plane can be assigned *polar coordinates*, (r, θ), where r is the directed distance from the pole and θ is the directed angle.

Example: Plot each of the following polar coordinates and then find three additional polar representations of the point for $-2\pi < \theta < 2\pi$.

a) $\left(4, \frac{\pi}{4}\right)$

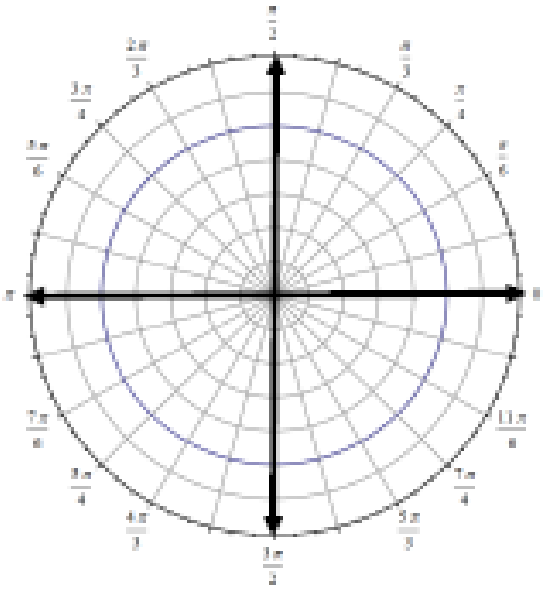


b) $\left(-2, -\frac{5\pi}{6}\right)$

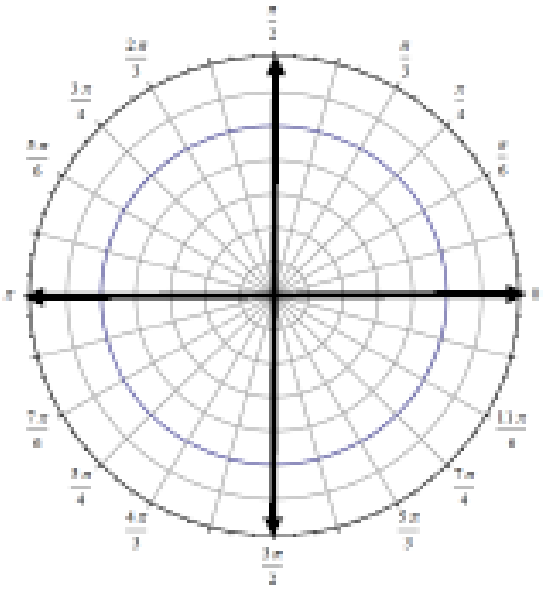


Problem Set #2: Plot each of the following polar coordinates and then find three additional polar representations of the point for $-2\pi < \theta < 2\pi$.

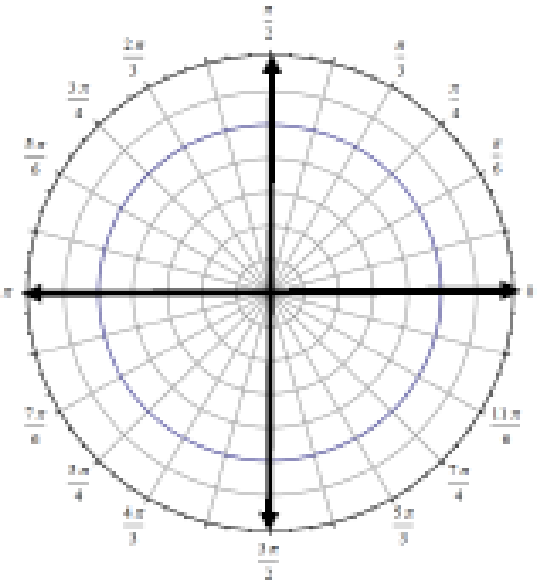
1) $\left(3, \frac{3\pi}{4}\right)$



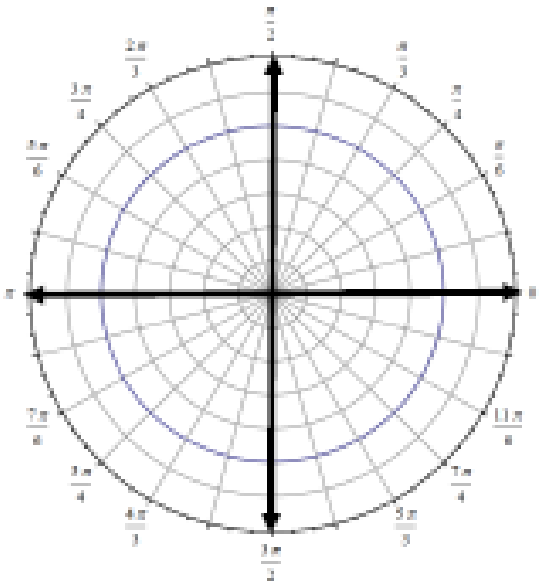
2) $\left(-\frac{1}{2}, \frac{4\pi}{3}\right)$



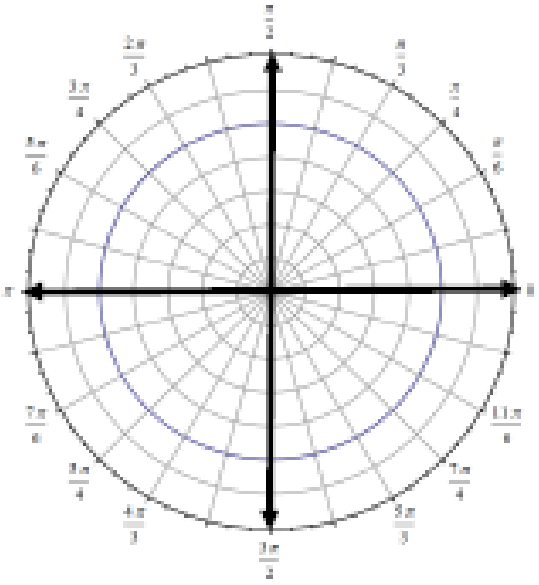
3) $\left(5, -\frac{\pi}{6}\right)$



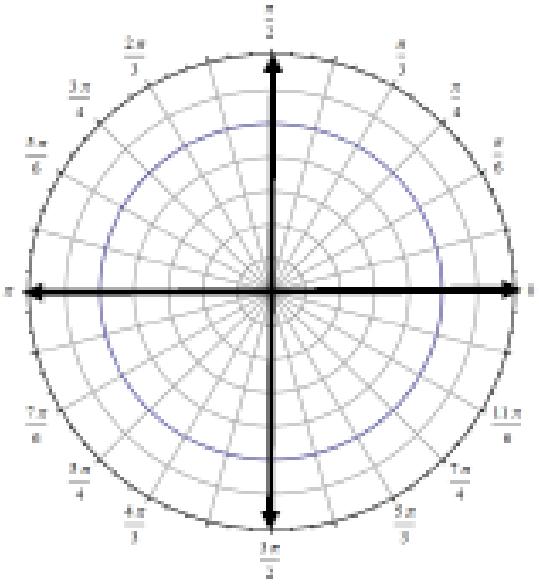
4) $\left(\sqrt{7}, \frac{11\pi}{6}\right)$



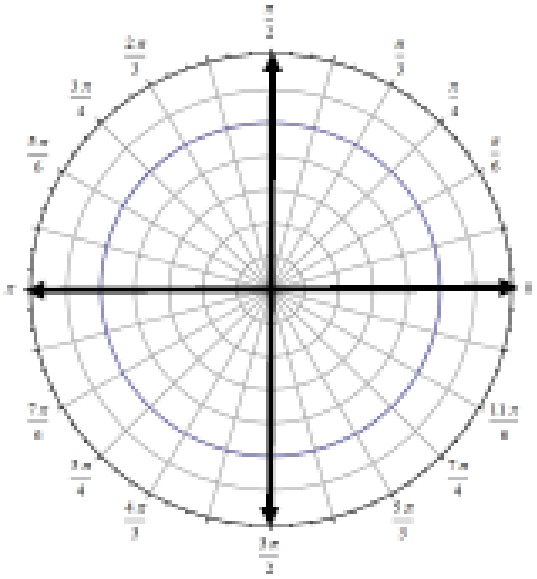
5) $\left(\frac{3}{4}, \frac{5\pi}{3}\right)$



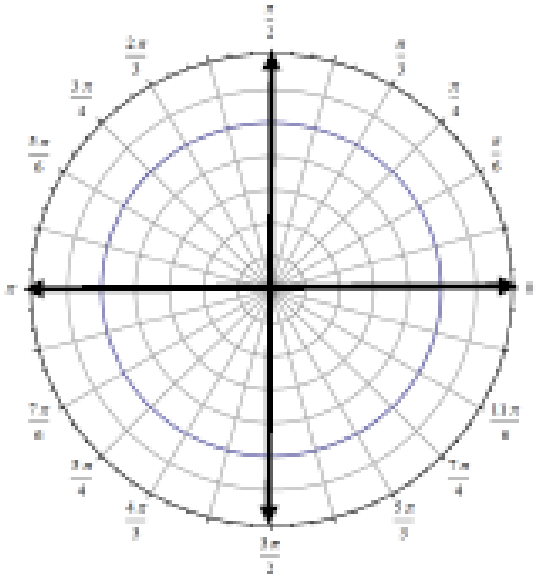
6) $\left(\frac{3}{2}, -\frac{\pi}{2}\right)$



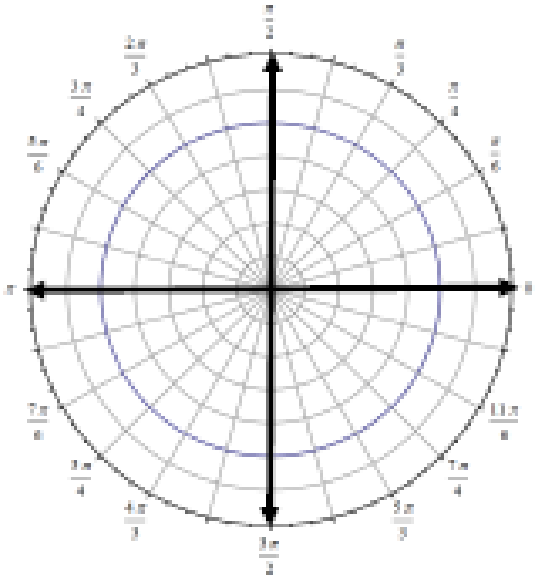
7) $\left(-1, -\frac{\pi}{4}\right)$



8) $\left(2\sqrt{3}, \frac{7\pi}{6}\right)$



9) $\left(-\frac{4}{3}, -\frac{2\pi}{3}\right)$



10) $(5, \pi)$