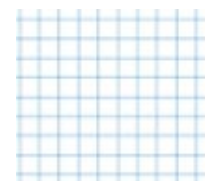
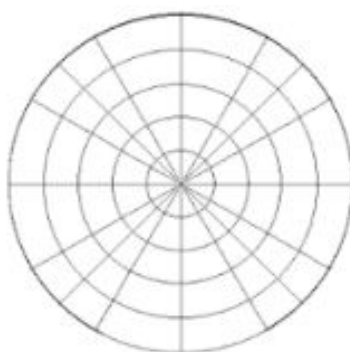


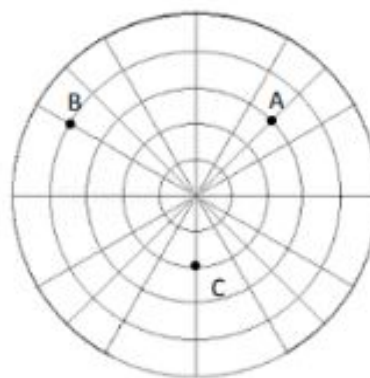
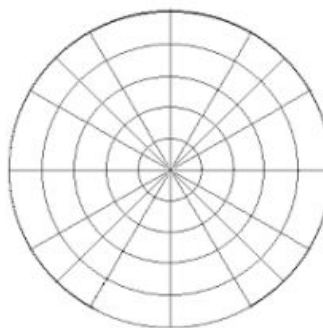
*Review of Prior Concepts*1. Find the magnitude of the vector $\langle \sqrt{3}, 1 \rangle$.2. Find the direction angle of the vector $\langle \sqrt{3}, 1 \rangle$.**Polar Coordinates**We are accustomed to graphing in the RECTANGULAR coordinate system (x,y) .

The POLAR coordinate system uses new axes and new coordinates.

 (r, θ) The polar coordinates of point A is $(3, 45^\circ)$ or $(3, \frac{\pi}{4})$.*Example 1:* Identify the coordinates of:

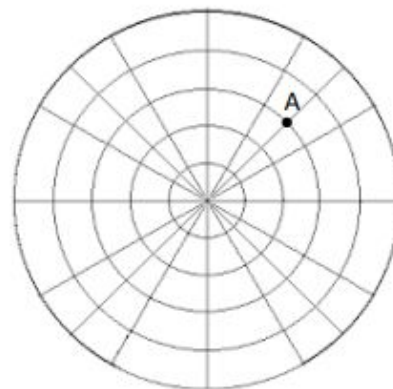
a) point B

b) point C

*Example 2:* Plot each of the given points:a) D $(5, \pi)$ b) E $(-2, \frac{\pi}{3})$ c) F $(3.5, -\frac{\pi}{6})$ 

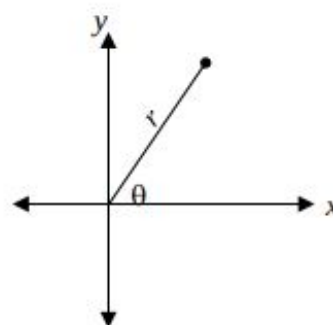
Example 3:

Determine the rectangular (x, y) coordinates of point A.



Convert Polar Coordinates to Rectangular Coordinates

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

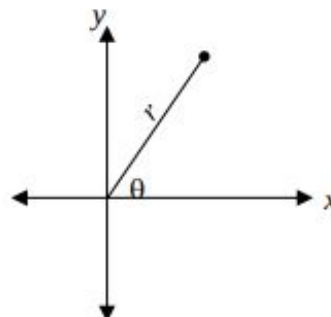


Example 4:

Convert $(2, \frac{5\pi}{6})$ to rectangular coordinates.

Convert Rectangular Coordinates to Polar Coordinates

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



Example 5:

Convert $(3\sqrt{2}, 3\sqrt{2})$ to polar coordinates.