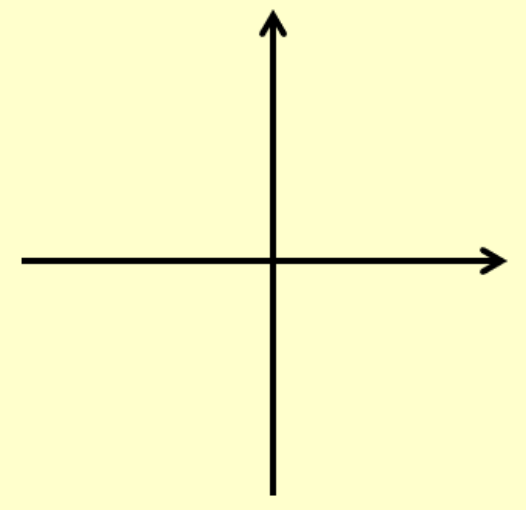
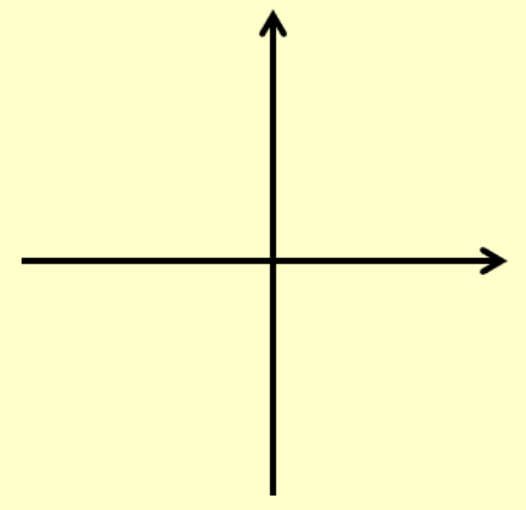
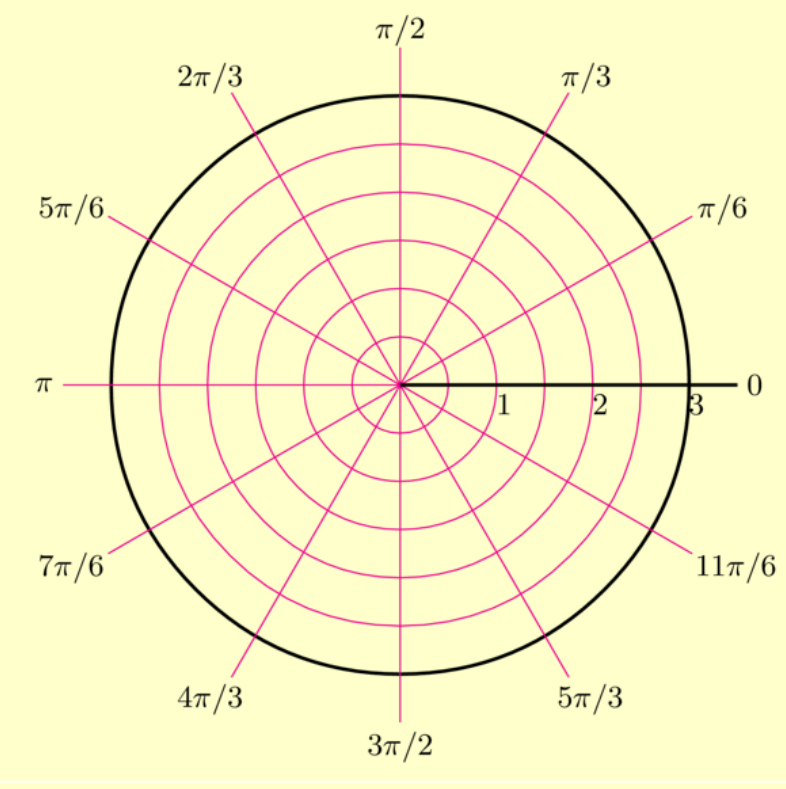
5A Polar Coordinates and Equations



Cartesian



Polar



1. Find the Polar coordinates of the following point:

a) (5,9)

b) (5, -12)

c) $(-\sqrt{3}, -1)$

2. Convert the following Polar coordinate into Cartesian form.

a) $\left(10, \frac{4\pi}{3}\right)$

b) $\left(8, \frac{2\pi}{3}\right)$

3. Find a Cartesian equation of the following curve:

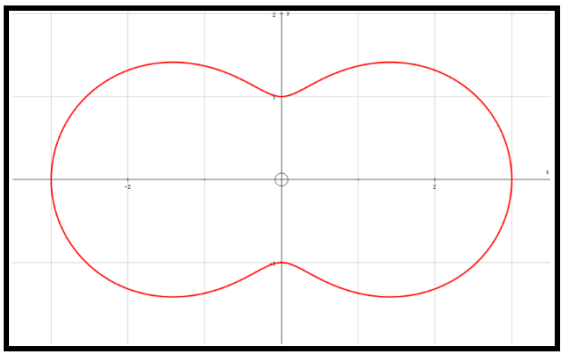
a) $r = 5$

b) $r = 6cosec\theta$

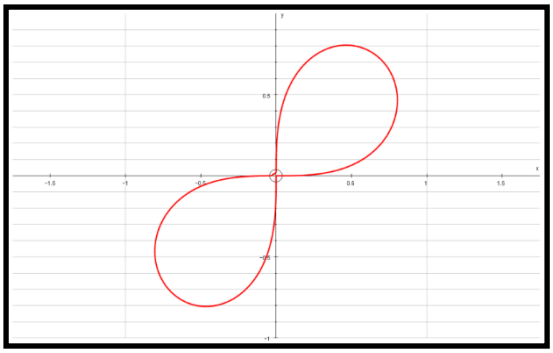
c) $r = 2 + cos2\theta$

d) $r^2 = Sin2\theta,\ 0 < \theta < \frac{\pi}{2}$

$(x^2 + y^2)^{\frac{3}{2}} = 3x^2 + y^2$



$(x^2 + y^2)^2 = 2xy$



4. Find a Polar equivalent for the following Cartesian equation:

a) $y^2 = 4x$

b) $x^2 - y^2 = 5$

c) $y\sqrt{3} = x + 4$