Given polar coordinates  $(r,\theta)$  and rectangular coordinates (x,y)... we can state the following relationships

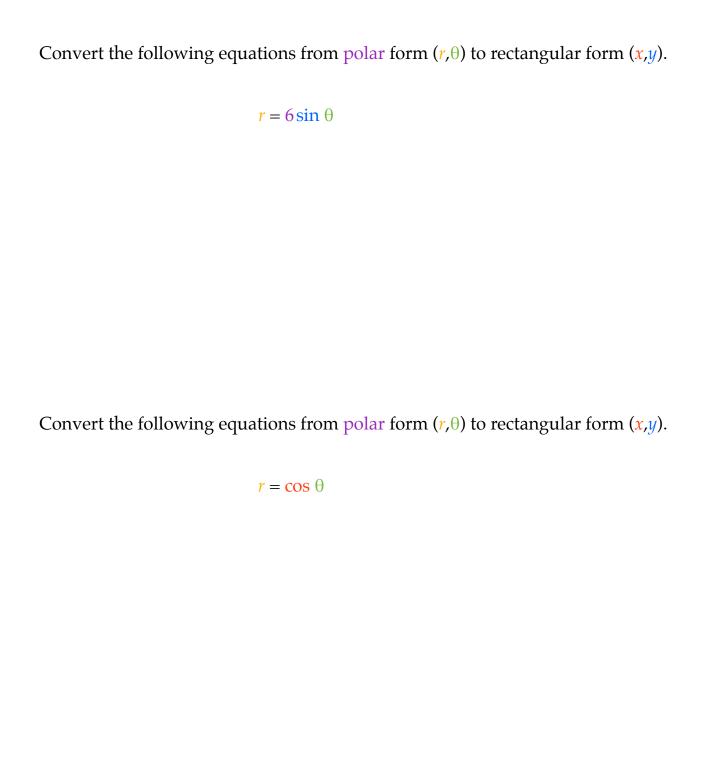
$$r = \sqrt{x^2 + y^2} \qquad \theta = \tan^{-1}\frac{y}{x} \qquad x = r \cdot \cos \theta$$

$$r^2 = x^2 + y^2 \qquad \tan \theta = \frac{y}{x} \qquad y = r \cdot \sin \theta$$

Convert the following equations from polar form  $(r,\theta)$  to rectangular form (x,y).

$$r = 4$$

$$\theta = \frac{\pi}{6}$$



Convert the following equations from polar form  $(r,\theta)$  to rectangular form (x,y).

$$r = 8\cos\theta - 8\sin\theta$$

Convert the following equations from polar form  $(r,\theta)$  to rectangular form (x,y).

$$r = \frac{4}{1 - \cos \theta}$$

Given polar coordinates  $(r,\theta)$  and rectangular coordinates (x,y)... we can state the following relationships

$$r = \sqrt{x^2 + y^2}$$
  $\theta = \tan^{-1}\frac{y}{x}$   $x = r \cdot \cos \theta$   
 $r^2 = x^2 + y^2$   $\tan \theta = \frac{y}{x}$   $y = r \cdot \sin \theta$