Name _____
Date _____ Period _____

Given polar coordinates (r,θ) 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,θ) to rectangular form (x,y).

$r = 4$

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

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

$$r = 6 \sin \theta$$

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

$$r = \cos \theta$$

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

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

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

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

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we can state the following relationships

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

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