10.3 Derivatives of Polar Functions

Recall from Pre-Calculus:

$$\frac{dy}{dx}$$

Examples:

1) Find the slope of the curve, $r = 3 + \sin\theta$, at $\left(3, \frac{\pi}{2}\right)$.

2) Find the points where $r = 1 + \cos\theta$ has horizontal and vertical tangent lines.

3) Find the slope of the line tangent to the curve, $r = \dfrac{2}{1+\sin\theta}$ at $\theta = -\dfrac{\pi}{4}$.

4) Find the slope of the curve, $r = \theta - \cos\theta$, at $\theta = \dfrac{\pi}{2}$

5) Find the equation of the tangent line in terms of x and y for the curve, $r = 4\cos\theta$, at $\theta = \dfrac{3\pi}{4}$.