## **Chain Rule & Polar Practice**

In 1-4, derive each function.

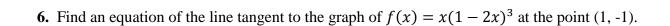
1. 
$$y = 2x \sin(3x)$$

**2.** 
$$y = \tan(\cos x)$$

3. 
$$f(x) = \sqrt{3x^2 + 2x + 1}$$

$$4. g(x) = \left(\frac{1 - \cos x}{\sin x}\right)^3$$

5. If 
$$y = 2\cos\left(\frac{x}{2}\right)$$
, then find  $\frac{d^2y}{dx^2}$ .



7. Find the equation of the tangent line to the graph of 
$$r = 3 - 2 \sin \theta$$
 at  $\theta = \pi$ .

**8.** For 
$$r = 3 - 2\sin\theta$$
, find all points  $(r,\theta)$  where the tangent line is horizontal.