Check your understanding

7. Given a polar curve $r = f(\theta)$, suppose that for some θ_0 we have $f(\theta_0) \neq 0$ and $f'(\theta_0) = 0$. What does this tell us about the slope of the tangent line to the curve at the point $(\theta = \theta_0, r = f(\theta_0))$?

(a) The tangent line is horizontal.

(b) The tangent line is vertical.

(c) The tangent line is tangent to a circle centered at the origin.

(d) None of the above.

Answer: (c)

Explanation: The tangent line is tangent to the circle of radius $f(\theta_0)$ centered at the origin.