

1. Use implicit differentiation to find $\frac{dy}{dx}$.

a. $4x^3 - 2y^3 = x$

b. $x^2 + \sqrt{xy} = 7$

c. $\sin^2(3y) = x + y - 1$

d. $y^2 = x \cos(y)$

e. $5x^2 + 2x^2y + y^2 = 3$

2. A *Folium of Descartes* has the equation $x^3 + y^3 - 9xy = 0$. Find the slope of the tangent line to the curve at the point $\left(\frac{9}{2}, \frac{9}{2}\right)$.
3. An *Oval of Cassini* has the equation $(x^2 + y^2 + 4)^2 - 16x^2 = 36$. Find the slope of the tangent line to the curve at the point $(2, \sqrt{2})$.

4. Find the slope of the tangent line to the given curve at the given point:

a. $xy + 16 = 0$; $(2, -8)$

b. $y^2 - 4x^2 = 5$; $(-1, 3)$

c. $x^2y + \sin(y) = 2\pi$; $(1, 2\pi)$