

1. Compute dy/dx .

(a) $y^4 + xy = x^3 - x + 2$

(c) $\tan(x^2y) = (x + y)^3 + e^{x+y}$

(b) $\sqrt{2} \cos(x + y) = \cos x - \cos y$

(d) $2x^2 - x - y = \sqrt{x^4 + y^4}$

2. Find an equation of the tangent line at the given point. $x^{2/3} + y^{2/3} = 2$, $(1, 1)$

3. Calculate $\frac{dy}{dt}$ at the point $(0, \frac{5\pi}{2})$ on the curve: $y \cos(y + t + t^2) = t^3$

4. Find the derivative using the logarithmic differentiation. $y = \sqrt{\frac{x(x+2)}{(2x+1)(3x+2)}}$

5. Compute dy/dx if $y = x^{3x}$.

6. Find $(f^{-1})'(7)$ where $f(x) = x^3 + 2x + 4$.