

Find dy/dx using implicit differentiation.

1. $y^3 + x^2y^5 - x^4 = 27$

2. $x^2 + 2xy = 3y^2$

Use logarithmic differentiation to find the derivative.

3. $f(x) = \frac{\sqrt{4x+3}}{(2x-5)^3}$

Differentiate.

4. $f(x) = 3e^{4x} - 12e^{-3x} + e^{2\sqrt{x}}$

5. $f(x) = \left(\frac{x^2}{x+5}\right)^4$

6. $f(x) = \left(3x^4 - \frac{12}{e^{3x}}\right)^3$

7. $f(x) = \sqrt{1 - e^{-x}}$

8. $f(x) = e^{2x} \ln x$

9. $f(x) = x \ln \sqrt[3]{3x+1}$

10. $f(x) = (\ln x)^3$

11. $f(x) = \ln \left(\frac{x^2 - 7}{x}\right)$