

Logarithmic Differentiation

This is a differentiation technique that simplifies finding the derivative of functions with multiple quotients, products, and powers

Logarithmic Differentiation

1. Apply $\ln(\cdot)$ to both sides of $y = f(x)$.
2. Use Log Rules to simplify the expression.
3. Differentiate Implicitly.
4. Solve for y' in terms of x and y .
5. Use the original equation to solve for y' in terms of only x .

Example 1.

Differentiate $y = \frac{x^{3/4}\sqrt{x^2+1}}{(3x+2)^5}$.

Example 2.

Differentiate $y = x^{\sqrt{x}}$