

4.4-Derivatives of Logarithmic Functions

Why do we know that the function $f(x) = \ln x$ is differentiable?

Other Bases:

Logarithmic Differentiation:

- 1.
- 2.
- 3.

Examples:

Compute and simplify:

$$\frac{d}{dx}(\ln(-x))$$

$$\frac{d}{dx}(\ln|\sin x|)$$

In 4.1 we proved that, if $f(x) = a^x$, then $f'(x) = Ka^x$, where $K = f'(0)$. Use logarithmic differentiation to find K .

Given $f(x) = x^3 \ln |3 - 2x|$, find $f'(x)$

Find the derivative of $f(x) = (1 + x)^{\frac{1}{x}}$

Find the derivative of $f(x) = \frac{x^2 \sin x}{\sqrt{1 + 2x}}$