

Using logarithmic differentiation

Logarithmic Differentiation involves taking the logarithm of both sides, before differentiating.

In some cases, this will actually make the differentiation easier.
(Moral: **check to see if you can rewrite the equation to make the differentiation easier.**)

$$y = x^x$$

$$\ln y = \ln(x^x)$$

$$\ln y = x \ln x$$

Notes

Logarithmic Differentiation

$$y = x^x$$

$$\ln y = x \ln x$$

$$\frac{1}{y} \frac{dy}{dx} = \ln x + x \cdot \frac{1}{x}$$

$$\frac{dy}{dx} = y(\ln x + 1)$$

$$\frac{dy}{dx} = x^x(\ln x + 1)$$

Notes

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