03 - Derivada logaritmica.

1. $f(x) = x^x \implies y = x^x \quad / \ln()$

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

$$\ln(y) = x \ln(x) \quad / \; ()'$$

$$\frac{1}{y} \cdot y' = \ln(x) + \frac{x}{x}$$

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

$$y' = y \left(\ln(x) + 1 \right), \quad y = x^x$$

$$y' = x^x \left(\ln(x) + 1 \right)$$

2. $f(x) = 2x^{x^2}$

$$y = 2x^{x^2} \quad / \ln()$$

$$\ln(y) = \ln\left(2x^{x^2} \right)$$

$$\frac{y'}{y} = 2x \ln(2x) + \frac{x^2}{2x} \cdot 2$$

$$y' = y \left(\ln(2x^{2y}) + x \right)$$

$$y' = 2x^{x^2} \left(\ln(2x^{2x}) + x \right)$$