

DERIVATA DI $f(x)^{g(x)}$

$F(x)$

$$y = f(x)^{g(x)}$$

$$y = e$$

$$g(x) \ln f(x)$$

$$\begin{aligned} D(f(x)^{g(x)}) &= D(e^{g(x) \ln f(x)}) = e^{g(x) \ln f(x)} \cdot D(g(x) \ln f(x)) = \\ &= e^{g(x) \ln f(x)} \left[g'(x) \ln f(x) + g(x) \frac{1}{f(x)} f'(x) \right] \end{aligned}$$

ESEMPIO

Calcolare la derivata di:

$$y = (x-2)^{x+3}$$

$$y = e^{(x+3) \cdot \ln(x-2)}$$

$$\begin{aligned} D(y) = y' &= e^{(x+3) \ln(x-2)} \left[1 \cdot \ln(x-2) + \frac{(x+3)}{x-2} \right] = \\ &= e^{(x+3) \ln(x-2)} \left[\frac{(x-2) \ln(x-2) + (x+3)}{(x-2)} \right] \end{aligned}$$