Exponential Functions and Derivatives

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Chapter 1

1.1 Exponential Functions

A function in the form

$$y = C^x$$

example:

$$y = 5^x$$

Where:

$$f(x) = 5^x$$
$$g(x) = x + 1$$

$$f[g(x)] = 5^{x+1}$$

The derivative of such a function:

$$y' = C^x \times x' \times \ln(C)$$

Example 1.1.1 ($y = 5^{-x}$)

$$y' = -5^{-x} \ln(5)$$

Example 1.1.2 ($y = 5^{-2x}$)

$$y' = -10^{-2x} \ln(5)$$