Exponents and Logarithms

Common Derivatives   (... Exponents and Logarithms)

$$\frac{d}{dx}\left(a^x\right) = a^x \ln\left(a\right)$$

$$\frac{d}{dx}\left(\mathbf{e}^x\right) = \mathbf{e}^x$$

$$\frac{d}{dx}\left(\ln\left(x\right)\right) = \frac{1}{x}, \quad x > 0$$

$$\frac{d}{dx}\left(\ln|x|\right) = \frac{1}{x}, \quad x \neq 0$$

$$\frac{d}{dx}\left(\log_a\left(x\right)\right) = \frac{1}{x \ln a}, \quad x > 0$$