

Transcendental Functions

Exponential functions

$$f(x) = \ln x$$

$$x = \ln y$$

Example

$$y = e^{-5x}$$

Theorem:

Using Definition of a derivative $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$

Ex. $y = (1 + 2x)e^{-2x}$

Ex. $y = e^{\sin t} (\ln(t^2) + 1)$

Ex. $y = \int_0^{\ln x} \sin e^t dt$

$y' = \int (e^{3x} + 5e^{-x}) dx$