

The Natural Logarithm and Exponential Stuff that I was supposed to have learned in previous classes:

$$\ln x = y \text{ implies that } e^y = x$$

$$\text{Domain of } f(x) = \ln x \text{ is } (0, \infty)$$

$$\ln(e^x) = x$$

$$\text{Range of } f(x) = \ln x \text{ is } (-\infty, \infty)$$

$$e^{\ln x} = x$$

$$\ln 1 = 0 \text{ and } \ln e = 1$$

$$\text{Domain of } g(x) = e^x \text{ is } (-\infty, \infty)$$

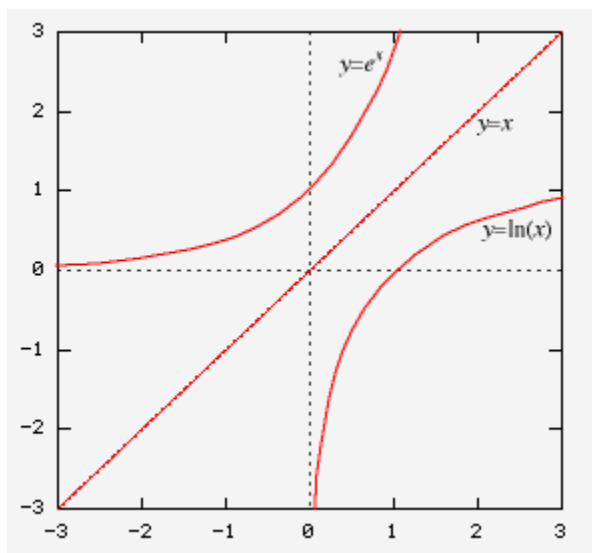
$$\ln(ab) = \ln a + \ln b$$

$$\text{Range of } g(x) = e^x \text{ is } (0, \infty)$$

$$\ln\left(\frac{a}{b}\right) = \ln a - \ln b$$

$$\ln x^n = n \ln x$$

$$(e^x)^2 = e^{2x}$$



$$\log_a(a^x) = x$$

$$\log_a(a^x) = x \text{ and } \log_a a = 1$$