

Natural Logarithmic Functions

$$\log_3 9 = 2$$

$$\log_{\uparrow 10} 100 = 2$$

$\ln 15$ base is "e"

"e" is Eulers Number = 2.71828...

$$y = e^x$$

Simplify into 1 LN

Ex: $2 \ln 15 - \ln 75$

Product:

$$\ln xy = \ln x + \ln y$$

$\cdot \ln 15^2 - \ln 75$

Quotient:

$$\ln \frac{x}{y} = \ln x - \ln y$$

$$\ln \frac{15^2}{75}$$

Power

$$\ln x^y = y \ln x$$

$$\boxed{\ln 3}$$

You Try:

$$3 \ln x + 2 \ln y + \ln 5$$

$$\ln x^3 + \ln y^2 + \ln 5$$

$$\ln x^3 \cdot y^2 \cdot 5$$

Solving Natural Logs

$$\ln(x-3)^2 = 4$$

$$\sqrt{e^4} = \sqrt{(x-3)^2}$$

$$\pm e^2 = (x-3)$$

$$+3$$

$$+3$$

$$\sqrt{4} = \sqrt{x^2}$$

base = e

rewrite in
Exponential
Form

$$\pm e^2 + 3 = x$$

$$e^2 + 3 = x$$

$$-e^2 + 3 = x$$

$$7.389 + 3 = x$$

$$-7.389 + 3 = x$$

$$10.389 = x$$

$$-4.389 = x$$

$$V = -0.0098t + c \ln R$$

$$R = 25 \quad c = 2.8 \quad t = 100$$

$$V = -0.0098(100) + 2.8 \ln 25$$

$$-0.98 + 9.0128$$

$$V = 8.03$$