Exponentials. $y = 3^x$

$\hat{y} = \log_3 x$ $y = 2^x$

$\hat{y} = \log_2 x$ $y = e^x$

$\hat{y} = \ln x$ $y = 10^x$

$\hat{y} = \log x$

Inverse Functions

Inverse Functions

$$2^{\log_2 x} = x \quad \| \quad 2^{\log_2 \square} = \square$$

$$2^{\log_2(\sin x)} = \sin x$$

$$\log_2(2^x) = x$$

$$\log_2(2^{\sin x}) = \sin x$$

$$2^{\log_2 8} = 8$$

$$2 = 10e^{-0.15t}$$

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$$\frac{1}{5} = e^{-0.15t}$$

$$\ln\left(\frac{1}{5}\right) = \ln\left(e^{-0.15t}\right)$$

$$\log_e\left(\frac{1}{5}\right) = \ln\left(\frac{1}{5}\right) = -0.15t$$

$$\frac{\ln\left(\frac{1}{5}\right)}{-0.15} = t$$

$$\log(3 \cdot 2^x) = 8$$

$$\log 3 + \log 2^x = 8$$

$$x \log 2 = 8 - \log 3$$

$$x = \frac{8 - \log 3}{\log 2} \approx 24.99$$

.

$$\log 10^2 = x$$

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$$\log(5x) = 4$$

$\log x = \log_{10} x$

$$10^{\log(5x)} = 10^4$$

$$5x = 10^4$$

$$x = \frac{10,000}{5}$$

$$x = 2000$$

$$\log(10x) = 2$$

$$10^{\log 10x} = 10^2$$

$$10x = 10^2$$

$$x = 10$$

$$\log_{10}(x) = y$$

$$10^y = x$$