

MATH 1314

Chapter 4.2: Logarithmic Functions

$$3^x = 9$$

$$3^x = 27$$

$$3^x = 16$$

$$a^x = y$$

$$a^y = x$$

$$y = \log_a x$$

$$a^x = y$$

$$x = \log_a y$$

Write in exponential form.

$$\text{LOG}_7 X = 3$$

$$\text{LOG}_b 25 = 2$$

$$\text{LOG}_4 26 = Y$$

Evaluate.

$$X = \text{LOG}_2 16$$

$$X = \text{LOG}_7 \left(\frac{1}{49} \right)$$

$$X = \text{LOG}_{25} 5$$

$$X = \text{LOG}_2 \sqrt[5]{2}$$

$$X = \text{LOG}_7 7$$

$$X = \text{LOG}_5 1$$

PROPERTIES

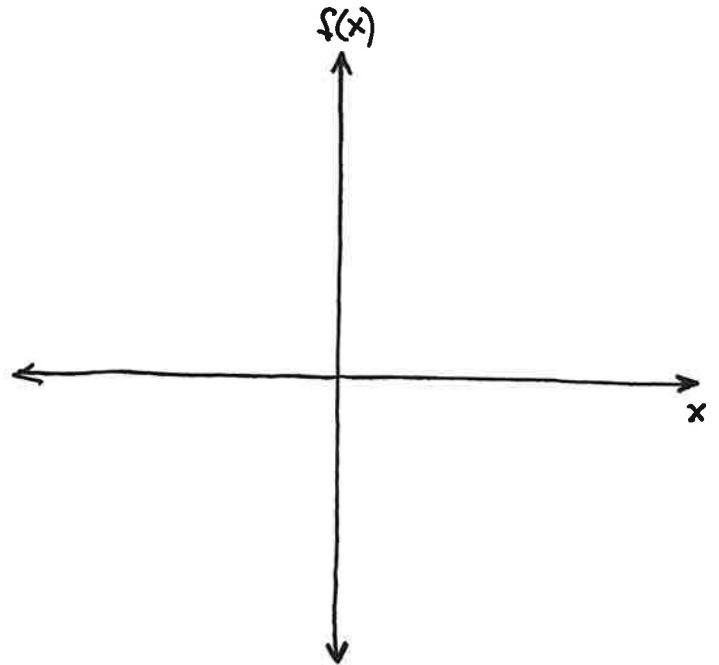
$$\text{LOG}_a a = 1$$

$$\text{LOG}_a 1 = 0$$

$$\text{LOG}_a a^x = x$$

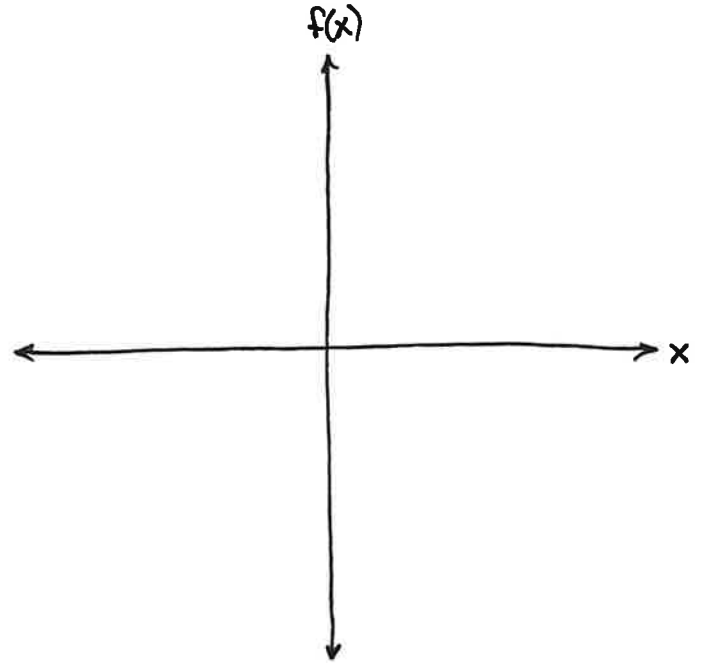
$$a^{\text{LOG}_a x} = x$$

Graph $f(x) = 2^x$ and $f(x) = \log_2 x$.

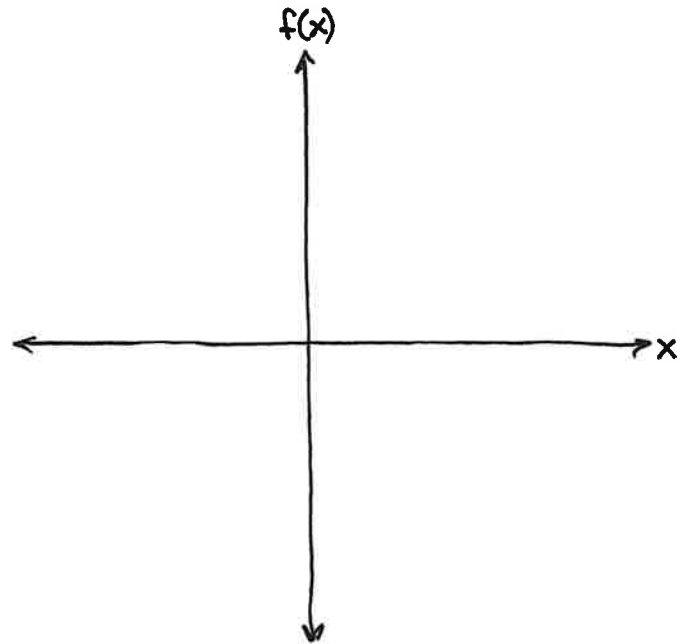


$$f(x) = \log_a x \quad f(x) = \pm b \cdot \log_a [c(x - h)] + k$$

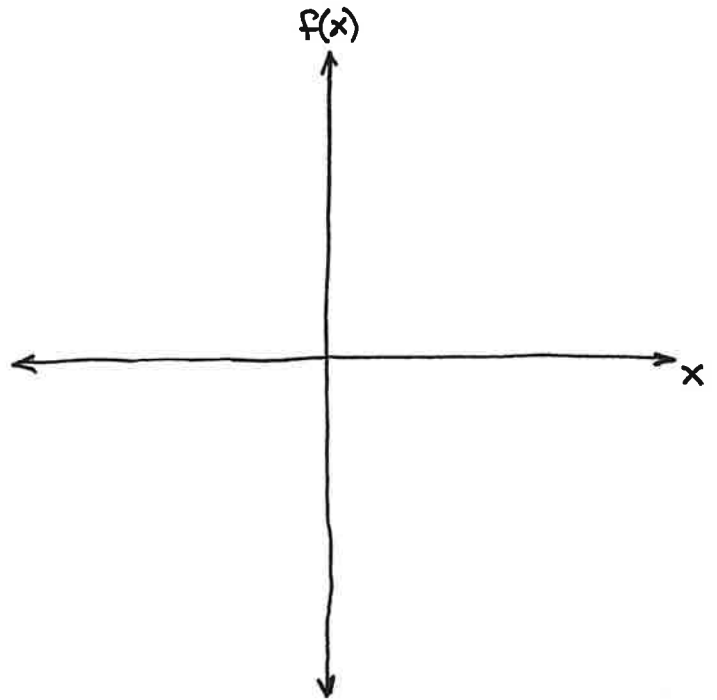
Graph $f(x) = \log_4 x + 3$.



Graph $f(x) = -\log_2 x$.



Graph $f(x) = \log_2(-x)$



Natural Log ...

$$\log_e x = \ln(x)$$

$$\ln 1 = 0$$

$$\ln e = 1$$

$$\ln e^x = x$$

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