MATH 1314
Chapter 4.2: Logarithmic Functions

$3^x = 9$ $3^x = 27$ $3^x = 16$

$a^x = y$ $x = \log_a y$

Write in exponential form.

$\log_7 X = 3$ $\log_b 25 = 2$ $\log_4 26 = y$

Evaluate.

$X = \log_2 16$ $X = \log_7 \left(\frac{1}{49}\right)$ $X = \log_{25} 5$

$X = \log_2 \sqrt[5]{2}$ $X = \log_7 7$ $X = \log_5 1$

PROPERTIES

$$\log_a a = 1$$

$$\log_a 1 = 0$$

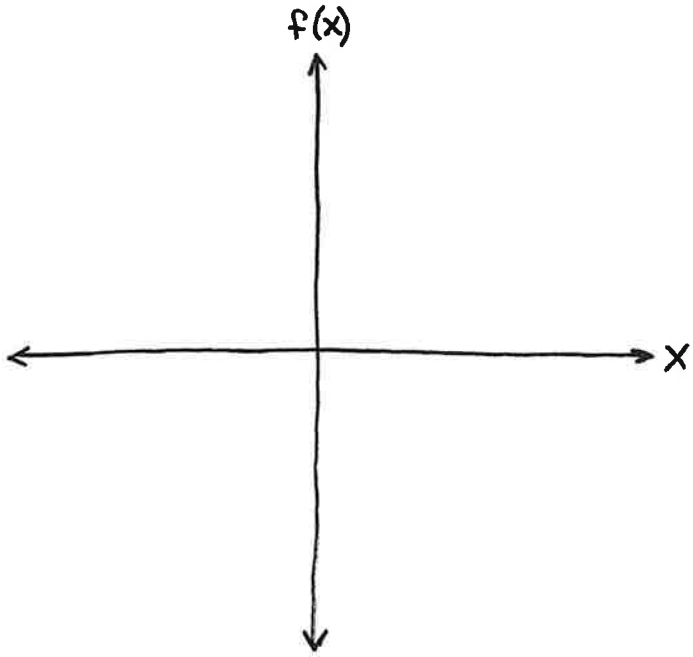
$$\log_a a^x = x$$

$$a^{\log_a x} = x$$

INVERSE REVIEW

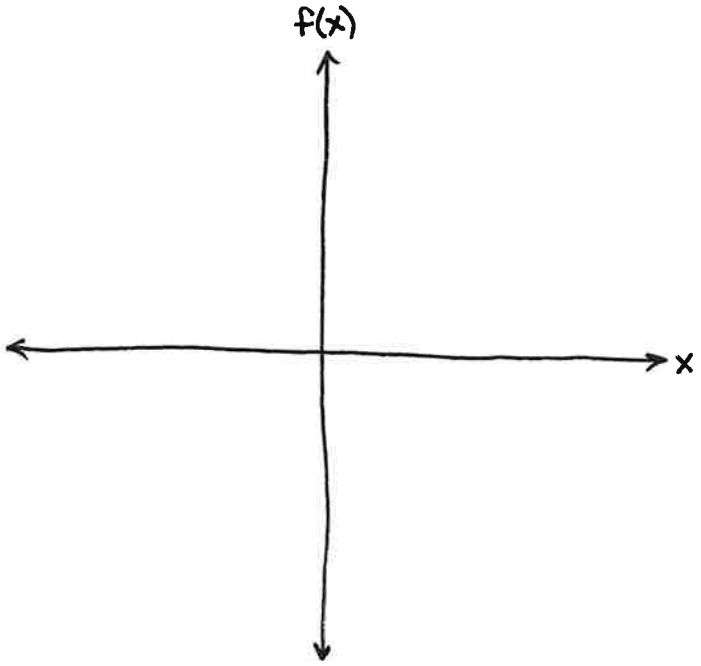
$f(x)$ $\quad$ $f^{-1}(x)$

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

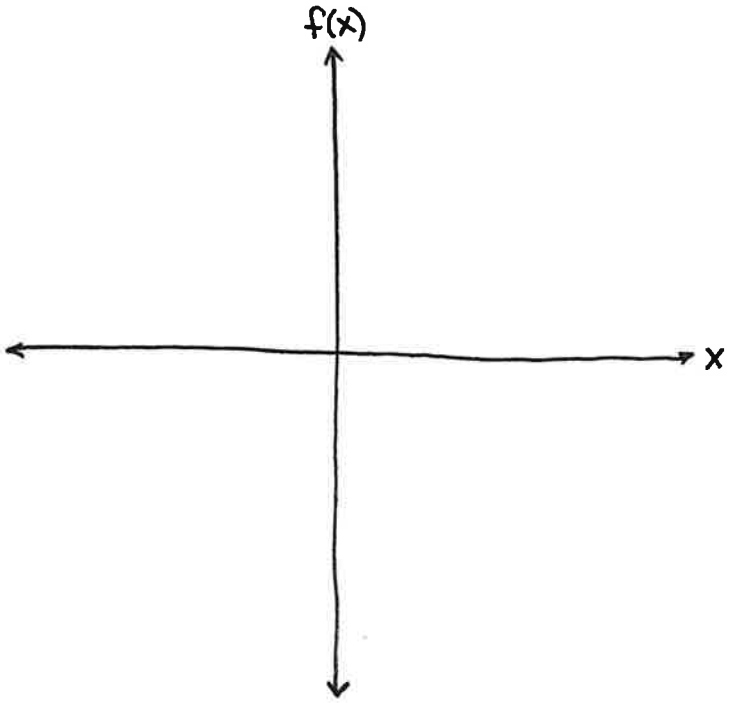


$f(x) = \log_a x$ $f(x) = \pm b \cdot \log_a[\pm c(x - h)] + k$

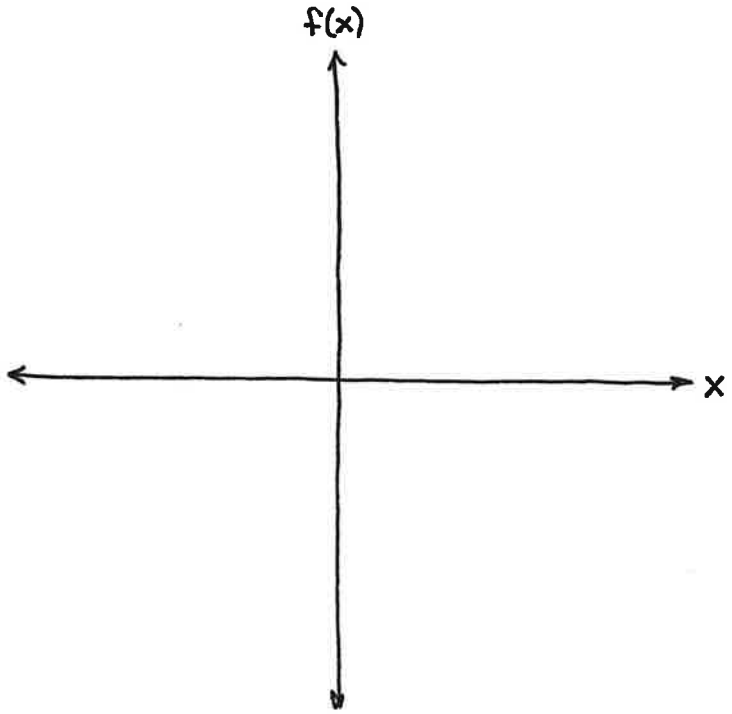
Graph $f(x) = \log_4 x + 3$.



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



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



Natural Log …

$\log_e x = \ln(x)$

$\ln 1 = 0$

$\ln e = 1$

$\ln e^x = x$

$e^{\ln x} = x$