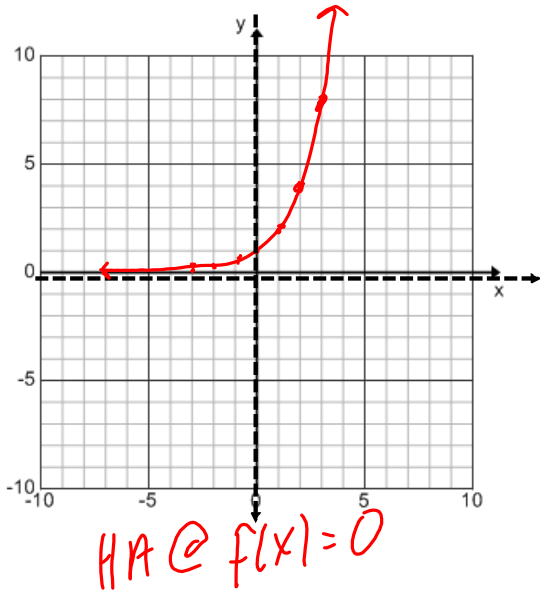


5-5 Notes: Graphing Exponential and Logarithmic Functions

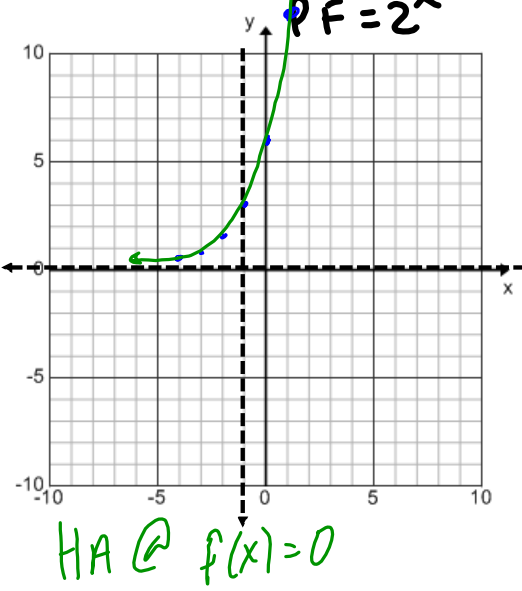
PF of an exp. function = function's base

Graphing Exponentials

Graph $f(x) = 2^x$

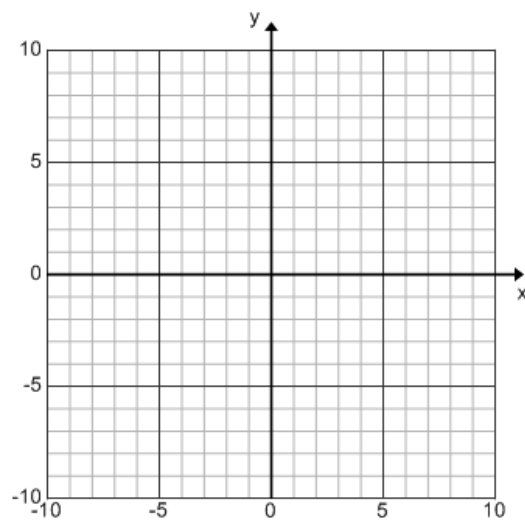
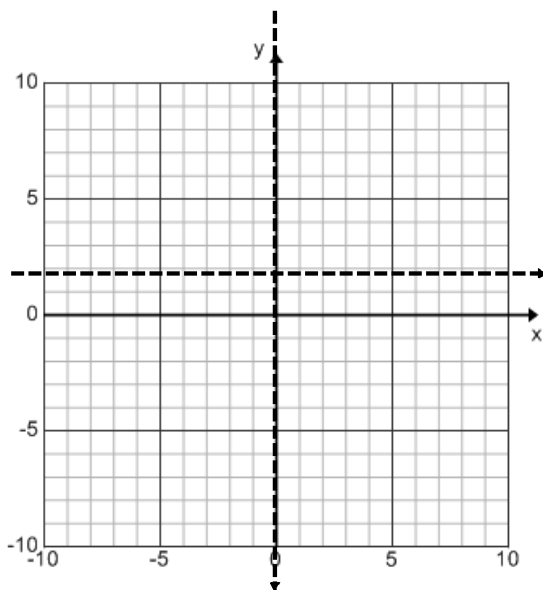


Graph $f(x) = 3(2)^{x+1}$



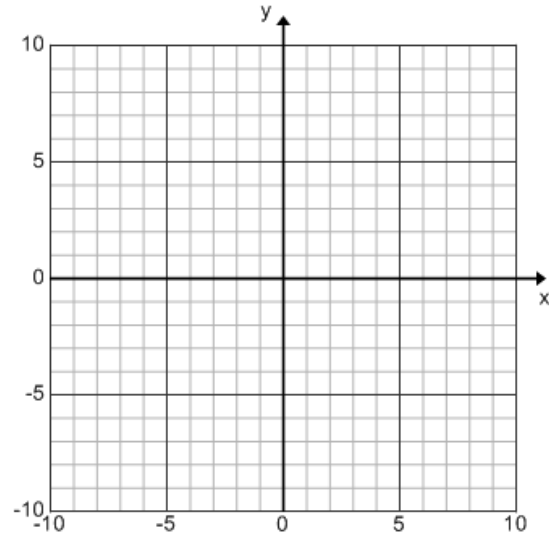
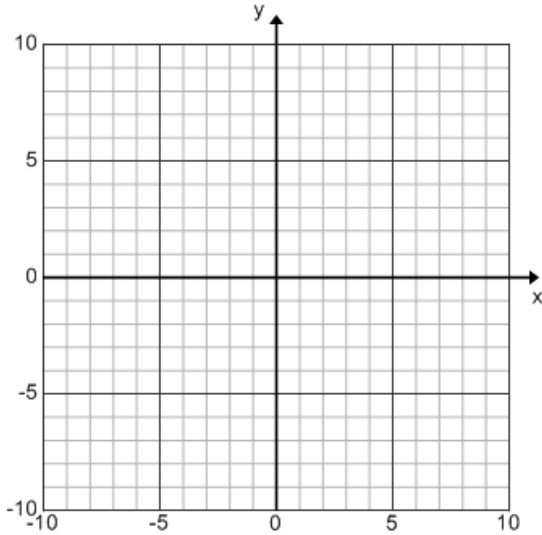
✗ Graph $f(x) = -(2)^x + 2$

✗ Graph $f(x) = (\frac{1}{2})^x + 2$



✂ Graph $f(x) = -2\left(\frac{1}{4}\right)^{x-5} + 4$

✂ Graph $f(x) = 8\left(\frac{1}{2}\right)^{x+2}$

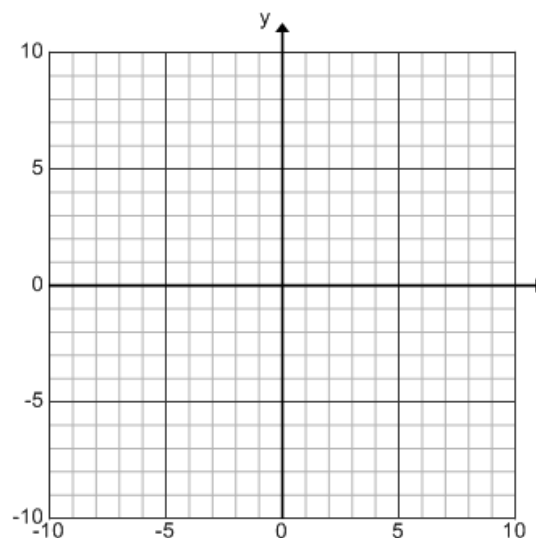
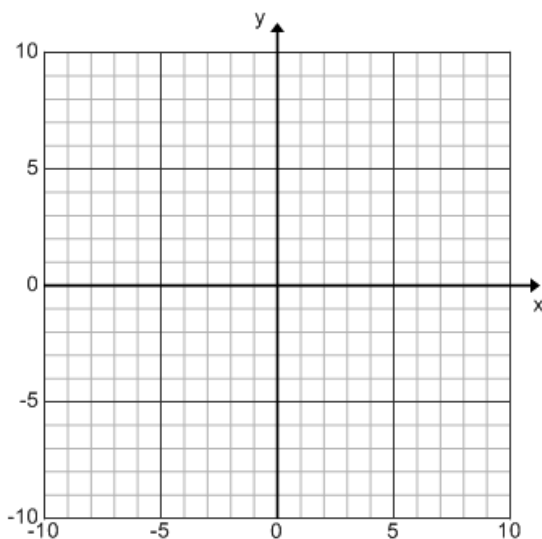


Inverses of Exponential functions

Logarithmic functions

Graph $f(x) = 2^x$

Graph $f^{-1}(x)$



RULE:

Restrictions:

COMMON AND NATURAL LOGS

If you see written $\log 1000$ it means _____

If you see written $\ln 1000$ it means _____

Common and natural logs are stored in your calculator.

Ex. $\log 32 \approx$

Ex. $\ln 32 \approx$

Re-write in logarithmic form.

Ex. $25 = 5^2$

TRY. $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$

Re-write in exponential form.

Ex. $0 = \log_{10} 1$

TRY. $\log_3 9 = 2$

Evaluating Logarithms

Evaluate (simplify/solve)

Ex. $\log_8 2$

Ex. $\ln\left(\frac{1}{e^3}\right)$

TRY. $\log_{10} 0.01$

TRY.
 $\log_5 1$

TRY.
 $\log(-7)$

TRY.
 $\log(x) = 2.7$

Ex.
 $\log x = 4$

TRY.
 $\ln x = \frac{1}{2}$

TRY.
 $10^{x+4} = 5.3$

Ex. $2^{\log_2 8}$

TRY. $5^{\log_5 25}$

TRY. $3^{\log_3 x}$

Find the Inverse of each Function.

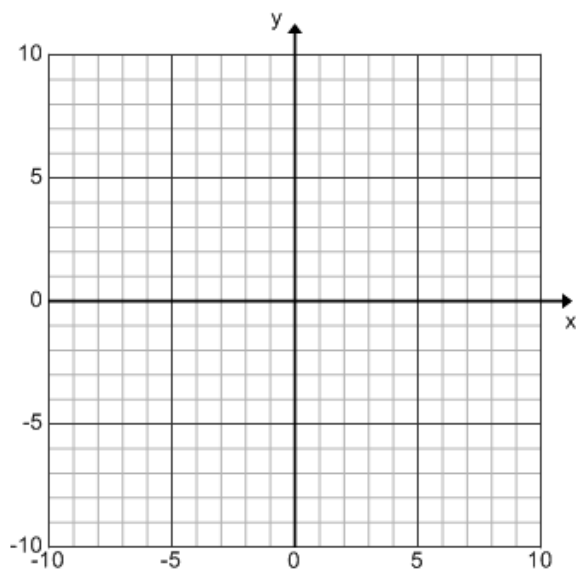
EX. $y = \log_2 x$

EX. $y = \log_3 3x$

EX. $y = \ln(x+1)$

GRAPHING and TRANSFORMATIONSGraph $f(x) = \log_2 x$

STEP 1: find the inverse function

STEP 2: graph / "T" chart $f^{-1}(x)$

STEP 3: reverse the coordinate values and plot the function.

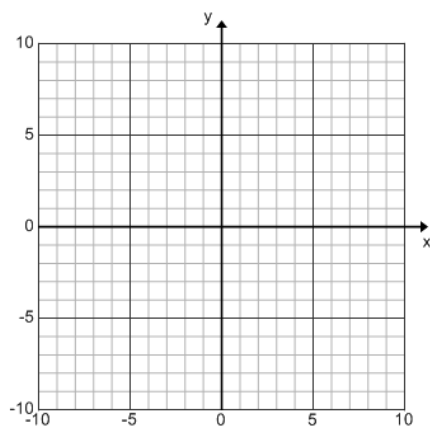
Translations of logs

Characteristic	$y = \log_b x$	$y = \log_b(x \mp h) \pm k$
Asymptote	$x = 0$	$x = \underline{\hspace{2cm}}$
Domain	$x > \underline{\hspace{2cm}}$	$x > \underline{\hspace{2cm}}$
Range		

TRY:

Graph and state domain, range, and asymptotes

$$y = \log_5 x$$



$$y = \log_3(x - 5) + 3$$

