7-3 Graphing Logarithmic Functions

Lesson Objective

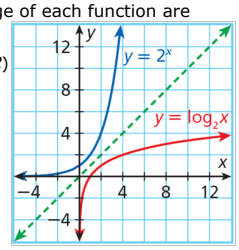
Write, evaluate, and graph logarithmic functions.

Jul 23-8:48 AM

Because logarithms are the inverses of exponents, the inverse of an exponential function, such as $y = 2^x$, is a **logarithmic function**, such as $y = \log_2 x$.

You may notice that the domain and range of each function are switched.

The domain of $y = 2^x$ is all real numbers (R)
The range is $\{y|y > 0\}$.
The domain of $y = \log_2 x$ is $\{x|x > 0\}$, and
The range is all real numbers (R).



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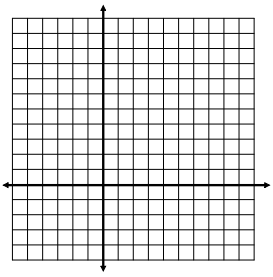
Use the x-values $\{-2, -1, 0, 1, 2\}$. Graph the function and its inverse. Describe the domain and range of the inverse function.

$f(x) = 1.25^x$

X	Y



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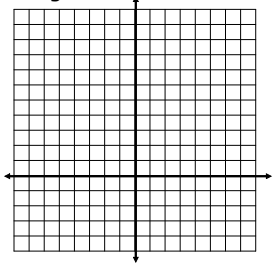
Use x = −2, −1, 1, 2, and 3 to graph $f(x) = \left(\frac{3}{4}\right)^x$. Then graph its inverse. Describe the domain and range of the inverse function.

X	Y



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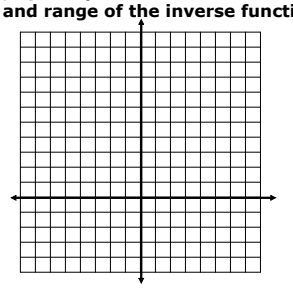
Use the x-values $\{-2, -1, 0, 1, 2\}$. Graph the function and its inverse. Describe the domain and range of the inverse function.

$f(x) = \left(\frac{1}{2}\right)^x$

X	Y



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The table lists the hydrogen ion concentrations for a number of food items. Find the pH of each.

Substance	H+ conc. (mol/L)
Milk	0.00000025
Tomatoes	0.0000316
Lemon juice	0.0063

To find the pH of each use the formula:

$pH = -\log[H^+]$

Jul 23-11:25 AM

Lesson Recap:

1. Make a table and use simple numbers, such as -2, -1, 0, 1, 2

2. use the table to graph the points of the graph for both the function and its inverse.

3. The formula for pH is: $pH = -\log[H^+]$

Jul 23-11:28 AM