

Exponential & Logarithmic Functions

Exponential Functions

Graph

$$f(x) = 2^x$$

Exponential Functions

Graph

$f(x)$ so that it now has a y - intercept of 3.

Exponential Functions

Graph

a function that is steeper than $f(x)$ but has a y-intercept at 1

Exponential Functions

Graph

An exponential function that is always decreasing.

Exponential Functions

Graph

Any exponential function that has an asymptote at $y = 3$

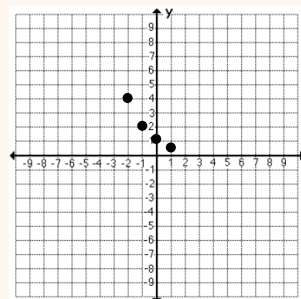
Exponential Functions

Graph

Any exponential function that has an asymptote at $y = 3$ and has an x-intercept.

Example

Determine the equation of a function that would fit the points.



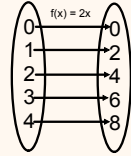
$$f(x) = a(b)^{cx} + c$$

x	y	ratio
-2	4	$\frac{1}{2}$
-1	2	$\frac{1}{2}$
0	1	$\frac{1}{2}$
1	$\frac{1}{2}$	$\frac{1}{2}$

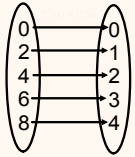
$$f(x) = \left(\frac{1}{2}\right)^x$$
$$= 2^{-x}$$

The Inverse

Consider the function $f(x) = 2x$



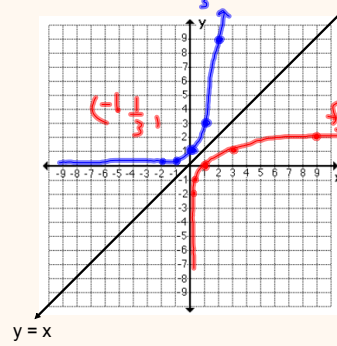
The inverse, would map the output values, back to their input values.



We use the notation f^{-1} to denote the inverse.
The inverse has the property that if $f(a) = b$, then $f^{-1}(b) = a$

Graphing an Inverse

Graph the function $f(x) = 3^x$ and $f^{-1}(x)$



Notice that the x and y coordinates are reversed in graphing the inverse.

The inverse can be found by reflecting the graph across the line $y = x$.

$$x = 3^y$$

write an equation for the inverse

Homework

Pg. 318, #1,6,7,8,19,20

Attachments

Matching Equivalent Expressions.doc