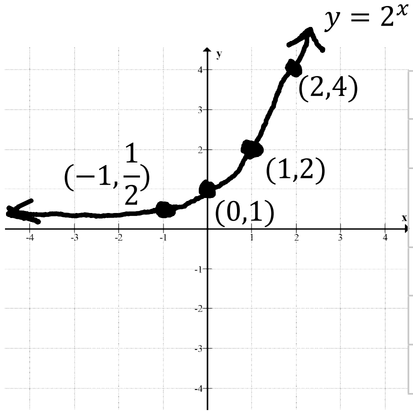
C12 - 8.8 - Inverse Log Graphs Notes

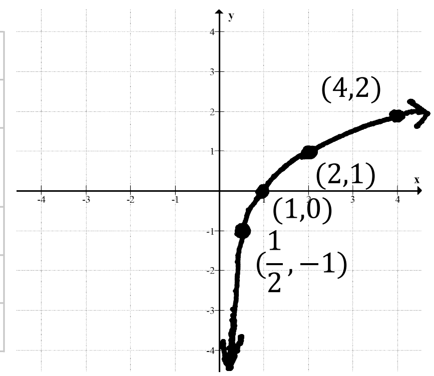
$y = 2^x$



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

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

$y = \log_2 x$



$y = 2^x$

$x = 2^y$ *Switch x and y*

$logx = log2^y$ Log Both Sides

$logx = ylog2$ Bring Exponents Down In Front

$\frac{logx}{log2} = y$ Divide

$\log_2 x = y$ Change of base

$y = \log_2 x$ Mirror

$f^{-1}(x) = \log_2 x$ Inverse Function notation

$y = 2^x$

$x = 2^y$ *Switch x and y*

$y = \log_2 x$ Exponential to log Form

$f^{-1}(x) = \log_2 x$

Back the Other Way!

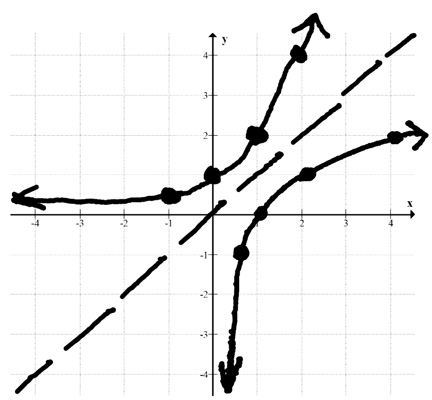
$y = \log_2 x$

$x = \log_2 y$

$2^x = y$

$y = 2^x$

$f^{-1}(x) = 2^x$



Remember: Inverse: Switch x and y
Remember: A diagonal reflection over the line $y = x$

$y = 2^{x+1} - 3$

$x = 2^{y+1} - 3$

$x + 3 = 2^{y+1}$

$\log(x+3) = (y+1)log2$

$\frac{\log(x+3)}{log2} = y + 1$

$\log_2(x+3) = y + 1$

$\log_2(x+3) - 1 = y$

$y = \log_2(x+3) - 1$

$f^{-1}(x) = \log_2(x+3)$

Inverse Proof

$y = \log_2(x+3) - 1$

$x = \log_2(y+3) - 1$

$x + 1 = \log_2(y+3)$

$2^{x+1} = y + 3$

$2^{x+1} - 3 = y$

$y = 2^{x+1} - 3$

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