Pre-Calculus
127

Logarithmic Functions
For $x > 0$, $a > 0$, and $a \neq 1$:
$y = \log_a x$ iff $x = a^y$
$f(x) = \log_a x$ is called a logarithmic function.

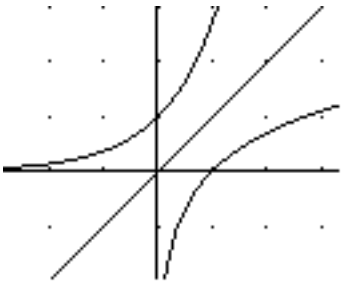
$\log_2 32 =$	5
$\log_3 1 =$	0
$\log_4 2 =$	$\frac{1}{2}$
$\log_{10}\left(\frac{1}{100}\right) =$	-2

When the base is 10, the logarithm is a **Common Logarithm**.
If the base is not written, then it is automatically 10
$\log 100 = 2$
When the base is e, the logarithm is a **Natural Logarithm**
$\log_e x = \ln x$
$y = \ln x$ iff $e^y = x$

$\ln 1 =$	0
$\ln e =$	1
$\ln e^x =$	x
$\ln x = \ln y \rightarrow$	$x = y$

$\log_a 1 =$	0
$\log_a a =$	1
$\log_a a^x =$	x
$a^{\log_a x} =$	x
$\log_a x = \log_a y \rightarrow$	$x = y$

$f(x) = a^x$ and $g(x) = \log_a x$ are inverses of each other
Their Graphs are reflections of each other through the line $y = x$



Assignment 127:
Page 203, #'s 2, 6, 8, 12, 14, 18, 26, 29, 37, 40