Unit #2: Logarithms
Topic: Logarithmic Functions
Objective: SWBAT evaluate logarithmic expressions by using their knowledge of exponents.

Warm Up #1:

Explain each of the following in your own words.

1) What is an exponential function?

2) What is the difference between a common log and a natural log?

The Log Function

So what exactly is a log??

A log is simply an _____. It is the _____ to which you must raise a particular base to get a specific result.

Think of the log function as the _____ of the exponential function.

Given $f(x) = 2^x$, we can see that $f(4) =$ _____ .

Then if $g(x) = \log_2 x$, we can see that $g(16) =$ _____.

Therefore,

_____ $\Leftrightarrow$ _____

Example #1:

Solve for x in each of the following:

a) $\log_3 81 = x$	b) $x = \log_4 \frac{1}{64}$	c) $\log_2 \sqrt{32} = x$

Things to Remember:

Common Logs	***Natural Logs***	***Logs base b***
$log1 =$ _____	$ln1 =$ _____	$\log_b 1 =$ _____
$log10 =$ _____	$lne =$ _____	$\log_b b =$ _____
$log10^x =$ _____	$lne^x =$ _____	$\log_b b^x =$ _____
$10^{logx} =$ _____	$e^{lnx} =$ _____	$b^{\log_b x} =$ _____

Example #2:

Evaluate the following:

a) $\log_7 7^{3x^2+2}$	b) $3lne$	c) $\log_{12} 12$	d) e^{ln7-1}
e) lne^{2x}	f) $\log_5 1$	g) e^{ln2x}	h) e^{2+ln3}

Assignment(s): pg. 236 #19-24, pg. 245 #73-86, pg. 276 #57-60

Problem Set #1:

Solve for x:

1) $log_2 64 = x$	2) $x = log_8 2^3$
3) $x = lne^{11}$	4) $log_{\frac{1}{12}} \frac{1}{144} = x$
5) $x = log1$	6) $x = ln\frac{1}{e}$
7) $x = log_7 \frac{1}{343}$	8) $log_{225} 15 = x$
9) $x = log_4 \sqrt{2}$	10) $log_{\sqrt{3}} 9 = x$

Evaluate each of the following:

11) $log_{13}\frac{1}{13}$	12) $ln\sqrt{e}$
13) 10^{log5}	14) $3lne^{x^2+4}$
15) $2^{log_2 37}$	16) $e^{ln\sqrt{7}}$
17) $log_6 1$	18) $e^{cos\pi+3}$
19) lne^e	20) $log10^3$