

## Warm Up: Pre-Calc

10/7

- 1) How many 2s do we multiply to get 16?
- 2) How many 10s do we multiply to get 1,000,000?
- 3) How many 3s do we multiply to get 27?

Feb 27-7:39 AM

## Solutions to W.U.:

- 1) 4
- 2) 6
- 3) 3

Oct 3-9:38 AM

**W.A.L.T.:**

Re-write exponential equations into logarithms and vice versa

**W.A.S.I.:**

We can write exponential functions as their corresponding logarithm and vice versa.

Mar 7-9:45 AM

**Notes!!!** Logarithms

A logarithm is the exponent to which a base is raised that results in a specific value.

Let's use an example to see what this means.

Mar 7-1:33 PM

**Notes!!!** Logarithms

Let's use an example to see what this means.

$$2^x = 8$$

A logarithm is the exponent to which a base is raised that results in a specific value.

Mar 7-1:33 PM

**Notes!!!** Logarithms

$$2^3 = 8$$

$$\log_2(8) = 3$$

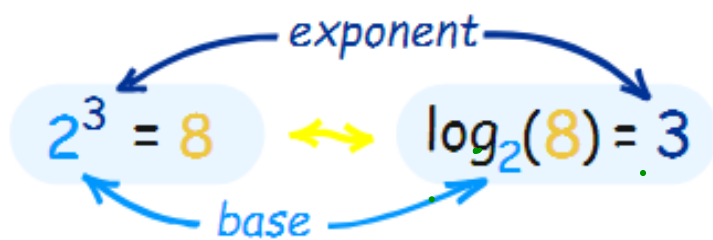
$$\log_2 8 = 3$$

A logarithm is the exponent to which a base is raised that results in a specific value.

Mar 7-1:33 PM

**Notes!!!** Logarithms

In that example the "base" is 2 and the "exponent" is 3:



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$\log_b x = y$  if and only if  $b^y = x$ .

Oct 7-10:56 AM

**Notes!!!** Logarithms

The general way of writing them is like this.

$$a^x = y$$
$$\log_a(y) = x$$

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**Notes!!!** Logarithms

The common log is a logarithm with a base of

10.

$$.10^x$$

We write them like this:  $\log 100 = 2$



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The process you went through in Items 1–3 is the basis for the concept of logarithms. If  $b$  and  $x$  are positive real numbers with  $b \neq 1$ , then the **logarithm** of  $x$  **base**  $b$  is written as  $\log_b x$  and is defined as:

$$\log_b x = y \text{ if and only if } b^y = x.$$

Oct 7-10:53 AM

**In Class Work:**

Rewrite each exponent as a logarithm.

a.  $10^4 = 10,000$

b.  $10^{-1} = \frac{1}{10}$

$$\log(10,000) = 4 \quad \log\left(\frac{1}{10}\right) = -1$$

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**In Class Work:**

Rewrite each logarithm as an exponent.

c.  $\log 100,000 = 5$       d.  $\log \frac{1}{100} = -2$

$$10^5 = 100,000 \qquad 10^{-2} = \left(\frac{1}{100}\right)$$

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**In Class Work:**

Evaluate without using a calculator.

e.  $\log 1000$       f.  $\log \frac{1}{10,000}$

$$10^x = 1000 \qquad 10^x = \left(\frac{1}{10,000}\right)$$
$$x = 3 \qquad x = -4$$

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Today's Activities:

- Notes

P.W. for tonight:

- pg. 64 #16 - 19, 22, 23

Day 1

Feb 27-7:23 AM