Happy Thursday, January 19th!

Homework on desk!

Do Now: Solve

$\log_4(x+2)=5$

$4^5 = x+2$

$1,024 = x+2$

$1022 = x$

PLAN

(P+L)(A+N)

PA+PN+LA+LN

Jan 19-8:11 AM

Homework Questions?

6

$\log_{10}(4t)=12$

$10^{12} = 4t$

$1,000,000,000,000 = 4t$

$250,000,000,000 = t$

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(8) $\log_{10}(x+3) = \frac{1}{2}$

$10^{\frac{1}{2}} = x+3$

$3.16 = x+3$

$-3 \quad -3$

$.16 = x$

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(9) $1 = \log_4 2 + \log_4(3+x)$ $\quad x=-1$

$1 = \log_4 (2)(3+x)$ $\quad \log_4 \frac{2}{3+x}$

$1 = \log_4(6+2x)$

$\log_4(6+2x) = 1$

$4^1 = 6+2x$

$4 = 6+2x$

$-6 \quad -6$

$\frac{-2}{2} = \frac{2x}{2}$

$x=-1$

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$$\log_2(t+1)+\log_2(t-1)=5$$

$$\log_2(t+1)(t-1)=5$$

$$\log_2(t^2-1)=5$$

$$2^5=t^2-1$$

$$32=t^2-1$$

$$33=t^2$$

$t=\sqrt{33}$

Jan 19-10:43 AM

U3IF2: Solving Logarithmic and Exponential Equations.

Please Keep Homework out and also find your Graphic Organizer.

Jan 19-8:17 AM

Recap: Solving LOGARITHMIC Equations

Method 1	Method 2	Method 3
One log	log=log	Craziness
$\log_2 x = 6$	$\log_2(x) = \log_2(16)$	Properties expand/condense
* LOOP TRICK	$x = 16$	$\log_3(x) + \log_3(x-2) = 6$

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Solving Exponential Equations

An exponential equation is:

an equation with a variable as an exponent

$3^{x+2} = 27$

$\log_3 27 = x+2$

Jan 19-8:19 AM

Method 1: Make bases match.

When to use? When each number can be written with the same base.

$2^{x-1} = 32$

$2^{x-1} = 2^5$

$x-1 = 5$

$x = 6$

$\log_2(5) = \log_2(x-1)$

$5 = x-1$

Write 2 to the 5 power?

$2^{x-1} = 32$

$\log_2 32 = x-1$

5

$5 = x-1$

$6 = x$

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$4^{x+5} = 64$

$4^{x+5} = 4^3$

$x+5 = 3$

$x = -2$

$\log_4 64 = x+5$

$3 = x+5$

$-2 = x$

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Method 2: Different Bases

Take the log of each side

$$5^{2x-3} = 18$$

$\log 5^{2x-3} = \log 18$

$(2x-3)\log 5 = \log 18$

$\frac{(2x-3)\log 5}{\log 5} = \frac{\log 18}{\log 5}$

$2x-3 = \frac{\log 18}{\log 5}$

$2x-3 = 1.796$

$2x = 4.796$

$x = 2.398$

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$$8^{4x+1} = 205$$

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$3^{x+2} = 27$

Solve for x

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