Questions on homework

Warm Up

ⓐ Convert $e^n = 100$ to log form

ⓑ Convert $\log_x(7) = 20$ to exp. form

LCQ later

ⓐ Convert $e^n = 100$ to log form

$n = \log_e(100)$

ⓑ Convert $\log_x(7) = 20$ to exp. form

$x^{20} = 7$

Find the inverse equation for $y = \sqrt[3]{\frac{x}{4} + 7}$.

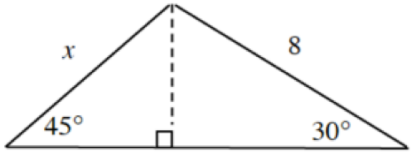
Show your work.

	Exponential Form	Logarithmic Form
a.	$y = 5^x$	
b.		$y = \log_7(x)$
c.	$8^x = y$	
d.	$A^K = C$	
e.		$K = \log_A(C)$
f.		$\log_{1/2}(K) = N$

4. Evaluate each expression without a calculator *(LCQ coming soon on this)*

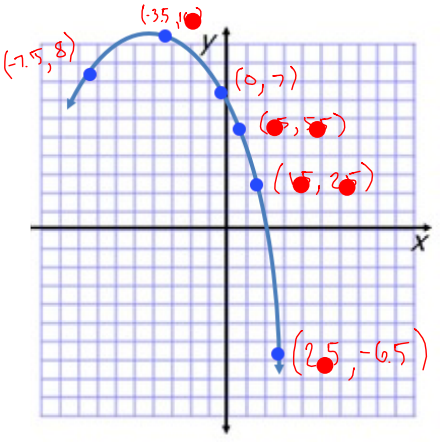
$\log_2 8$ $\log_5 125$ $\log_{36} ? = \frac{1}{2}$

6. Think back to y our days in Geometry. Find the value of x.



b. Is the graph below a function ?

Is it's inverse a function ?



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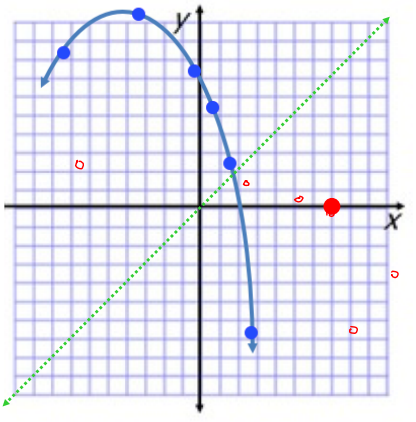
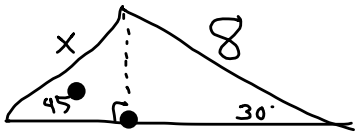


(5) $10^{3x} = 10^{x-8}$

6



76 (a) $x^2+7x+8=0$

(b) $(x+2)^2=4$

take square root

(c) $5x^2-x-7=0$

Quad Formula

(d) $x^2+4x=-1$

$x^2+4x+1=0$

complete square

Today Find inverses of log and Exponential Functions

Thur Review

Fri Test on Ch 5

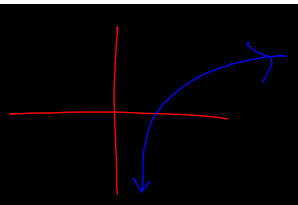
TEST INFORMATION SHEET

Test Conditions

- Assembly Schedule
- Most should finish
- Split possibilities

Thursday after school
Friday lunch
Friday after school

Aim #1 today



Finding inverses of log and expon. functions

To find the inverse of an exponential function:

$f(x) = 2^x$

Inverse → reverse x and y

Change to graphing form → Convert to log form

$f(x) = 2^x$ → Inverse → Change to graphing form →

reverse x and y

Convert to log form

$y = 2^x$ $\quad x = 2^y$ $\quad y = \log_2(x)$

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

A similar process is used if you start with a log function

$y = \log_6(x)$

5 - 71

inverse:

(a) $y = \log_9 x$ $\quad x = \log_9(y)$

convert to exp. form $\quad 9^x = y$

$y = 9^x$

Clarification

function

$y = \log_q x$

inverse:

$x = \log_q y \Rightarrow y = q^x$

exponent

both statements are the inverses

(b) $y = 10^x$

inverse

$y = \log_{10}(x)$

(c) $y = \log_6(x+1)$ $x = \log_6(y+1)$ $y = 6^x - 1$

$6^x = y+1$

(d) $y = 5^{2x}$

$x = 5^{2y}$

$\log_5(x) = 2y$

$\frac{\log_5(x)}{2} = \frac{2y}{2}$

$y = \frac{\log_5(x)}{2}$

$y = \frac{1}{2} \cdot \log_5(x)$

Challenge: Find the algebraic inverse of

$y = 3(2)^x - 10$

$x = 3(2)^y - 10$

$+10 \quad +10$

$x + 10 = 3(2)^y$

$\frac{x+10}{3} = \frac{3(2)^y}{3}$

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

$y = \log_2\left(\frac{x+10}{3}\right)$

$y = b^x \iff y = \log_b(x)$

L C Q

5 .....85-87, 91, 92bd, 97, 103

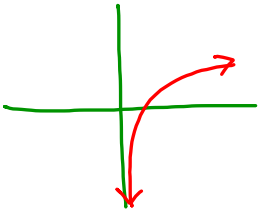
do 88 if you want practice with that type of question.

What You Should Know

The Log Function

- Features of Log Graphs in the form $f(x) = \log_b x$

(1) Their appearance

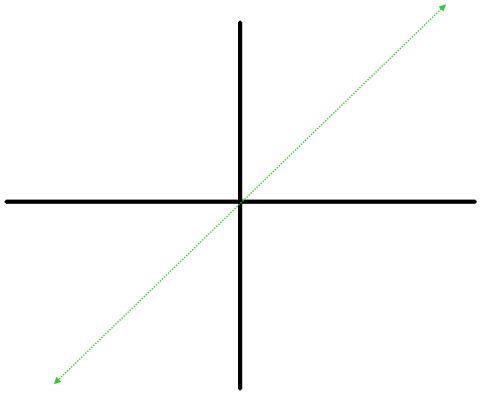


Domain

Range

(2) Log functions are defined only when bases are $0 < b < 1$ or $b > 1$

$y = \left(\frac{3}{4}\right)^x$ $y = \log_{\frac{3}{4}}(x)$



(3) Their graphs have a single vertical asymptote (equation: $x = 0$)

(4) The x-intercept is $(1, 0)$