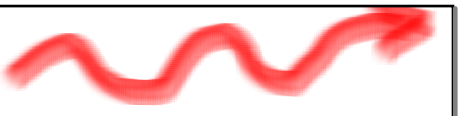
IF there is a late start, skip the graphs of log functions until tomorrow, the review day.

This will leave time for the LCQ.

Questions on homework



Pick Up
the Warm Up

① $g(x) = (5x^7 + 1)^3$

Switch $x \leftrightarrow y$

$y = (5x^7 + 1)^3$

$\sqrt[3]{x} = \sqrt[3]{(5y^7 + 1)^3}$

$\sqrt[3]{x} = 5y^7 + 1$

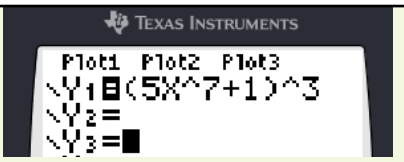
$\sqrt[3]{x} - 1 = 5y^7$

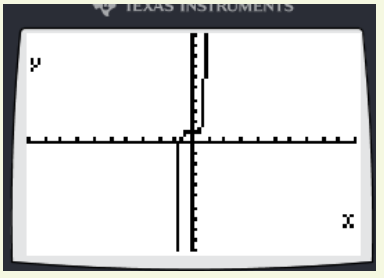
$\sqrt[7]{\frac{\sqrt[3]{x} - 1}{5}} = \sqrt[7]{y^7}$

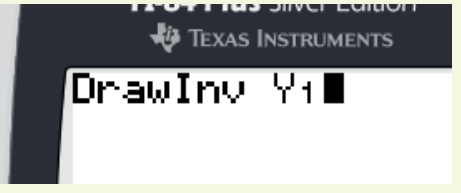
$g^{-1}(x) = \sqrt[7]{\frac{\sqrt[3]{x} - 1}{5}}$

(2) Is the inverse of $g(x)$ a function.

(hint: Graph ON GDC)







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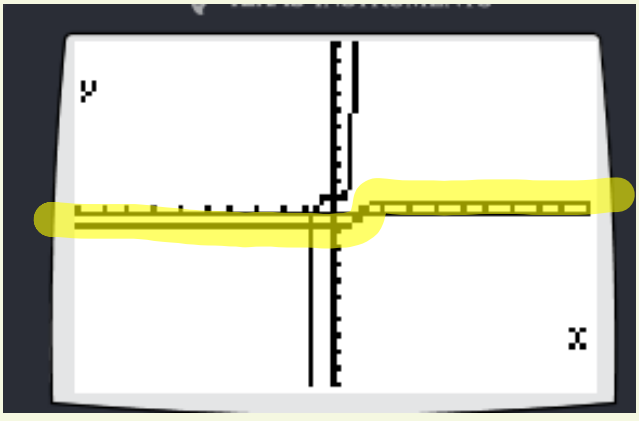


(3) $f(m) = \frac{m}{10} - 30$

$g(m) = 2\pi\sqrt{\frac{m}{980}}$

find $g(f(950))$

$f(950) = \frac{950}{10} - 30$

$= 95 - 30$

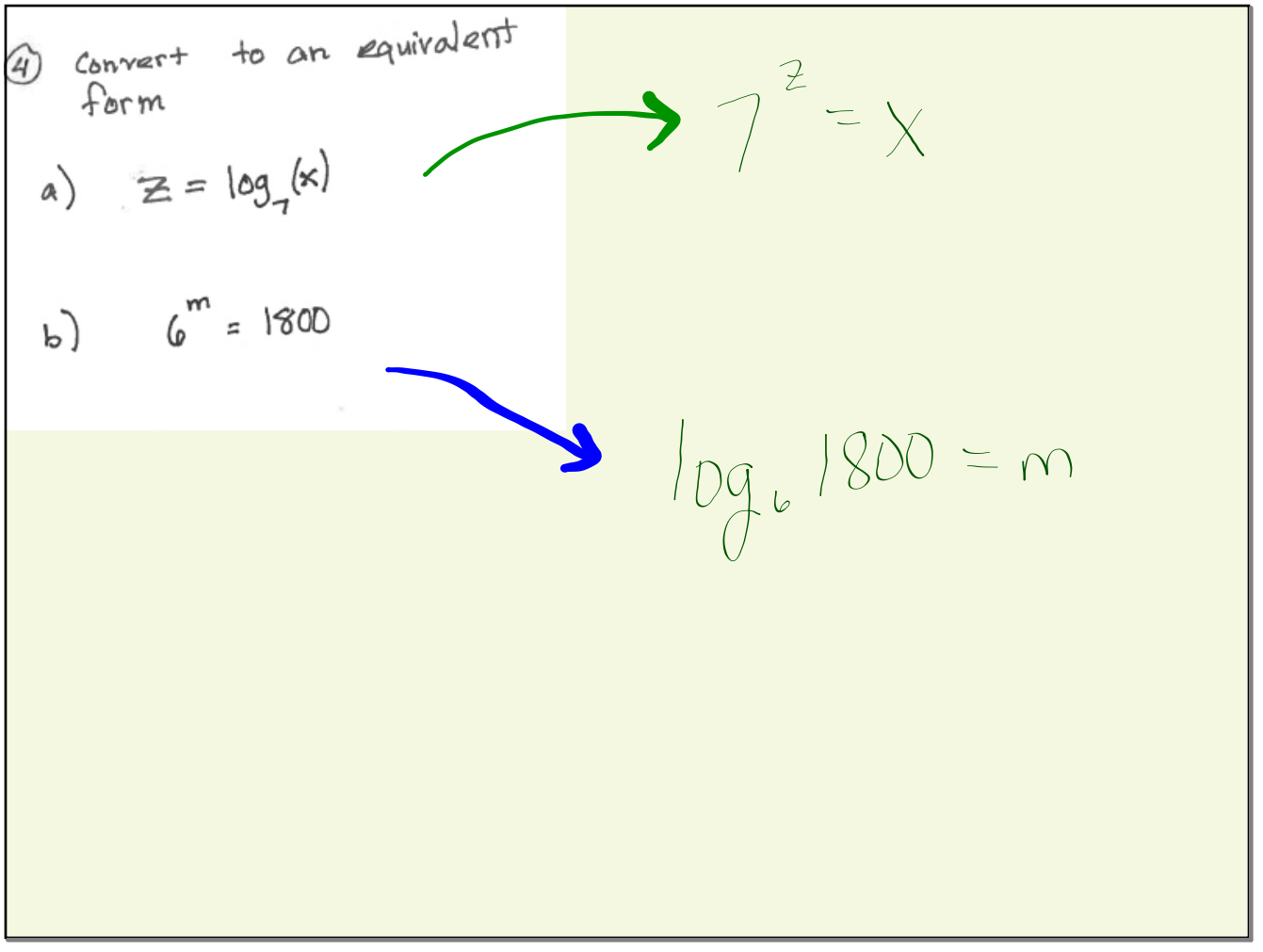
$= 65$

$g(65) = 2\pi\sqrt{\frac{65}{980}}$

$= 1.618$

$2\pi\sqrt{\frac{\frac{m}{10} - 30}{980}}$

$= 1.618$


4) Convert to an equivalent form
a) $z = \log_7(x)$
$7^z = x$
b) $6^m = 1800$
$\log_6 1800 = m$

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HW Questions

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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)*

$\log_2 8 = x$

$2^x = 8$

$x = 3$

$\log_2 8 = 3$

$\log_5 125 = x$

$5^x = 125$

$x = 3$

$\log_5 125 = 3$

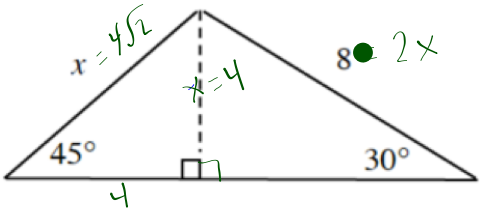
$\log_{36}(?) = \frac{1}{2}$

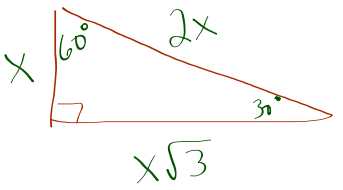
$36^{\frac{1}{2}} = ?$

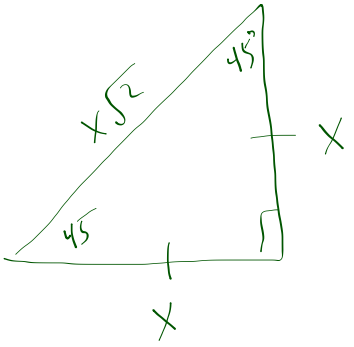
$\sqrt{36} = 6$

$? = 6$

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







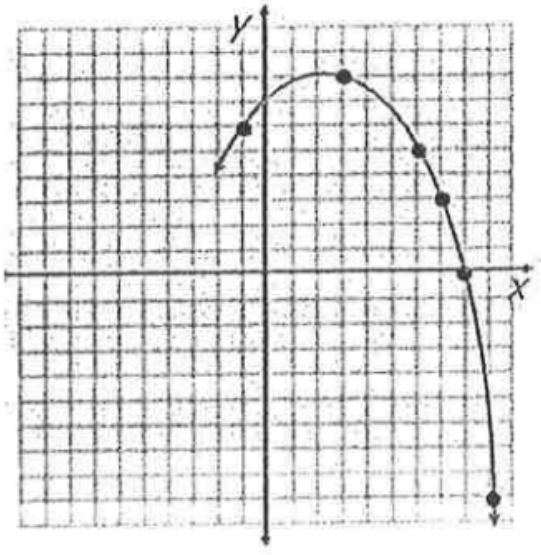
$x\sqrt{2} = hyp$

$x^2 + x^2 = hyp^2$

$\sqrt{2x^2} = hyp$

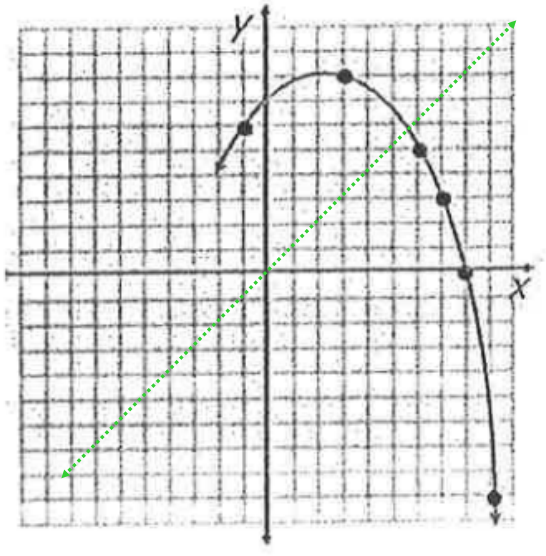
b. Is the graph below a function ?

Is it's inverse a function ?



b. Is the graph below a function ?

Is it's inverse a function ?



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

$3x = x - 8$

$2x = -8$

$x = -4$

$10^{3(-4)} = 10^{-4-8}$

$10^{-12} = 10^{-12}$ ✓

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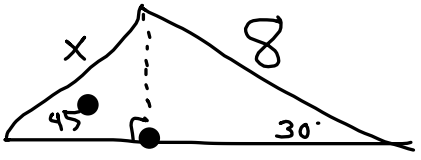
6



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

Factor

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

take square root

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

Quad Formula

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2}$$

$1-4(5)(-7)$

$1-140$

141

discriminant

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

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

complete square

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TEST INFORMATION SHEET

ON BACK OF WARM UP

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 →

reverse x and y

$y = 2^x$

$x = 2^y$

Change to graphing form →

Convert to log form

$\log_2 x = y$

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

inverse is:

$y = \log_6(x)$

switch $x \leftrightarrow y$

$x = \log_6(y)$

$6^x = y$

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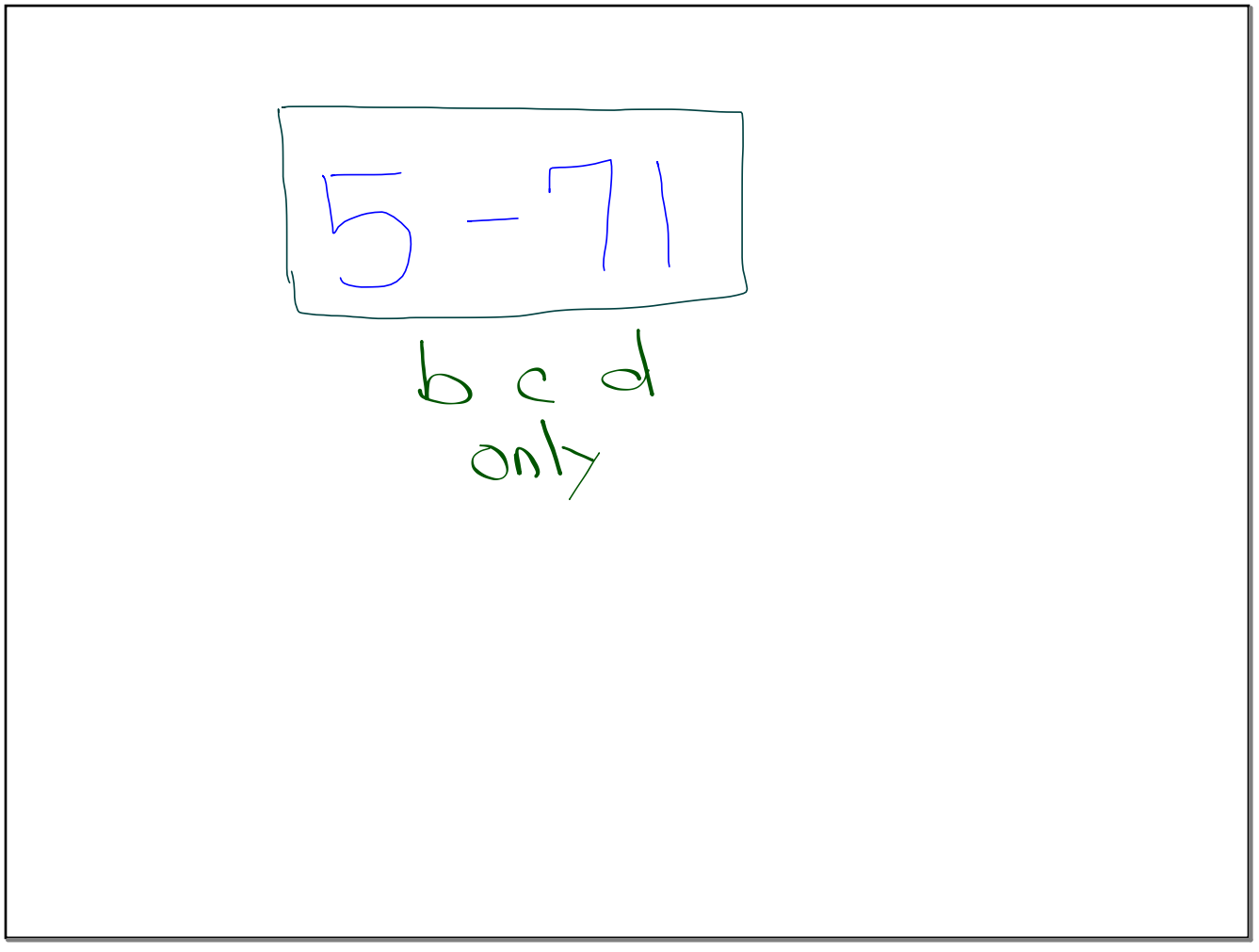

(b) $y = 10^x$ Inverse

switch $x \leftrightarrow y$ $\quad x = 10^y \quad y = \log_{10} x$

(c) $y = \log_6(x+1)$ Inverse

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

exponent form

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

switch $x \leftrightarrow y$

$x = 5^{2y}$

write in log form

$2y = \log_5 x$

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

Challenge: Find the algebraic inverse of

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

If $y = b^x$ then $x = \log_b(y)$

Switch $x \leftrightarrow y$

Isolate "y"

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

$x + 10 = 3 \cdot 2^y$

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

Write in log form

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

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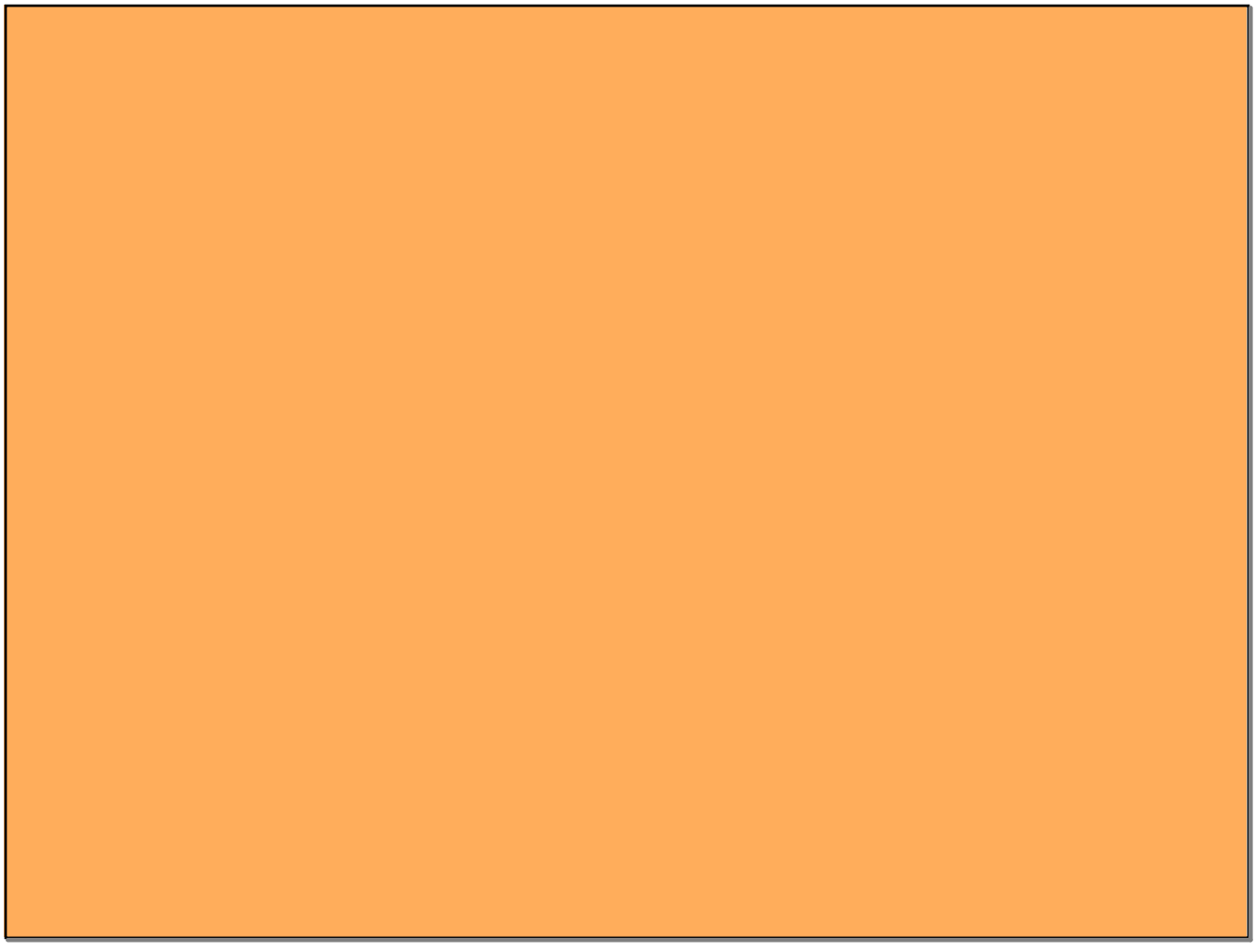

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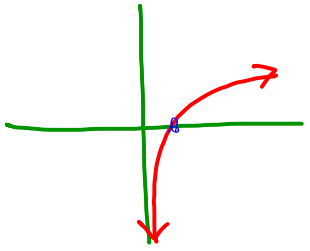
What You Should Know

The Log Function

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

(1) Their appearance



Domain $0 < x < \infty$

Range $-\infty < y < \infty$

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

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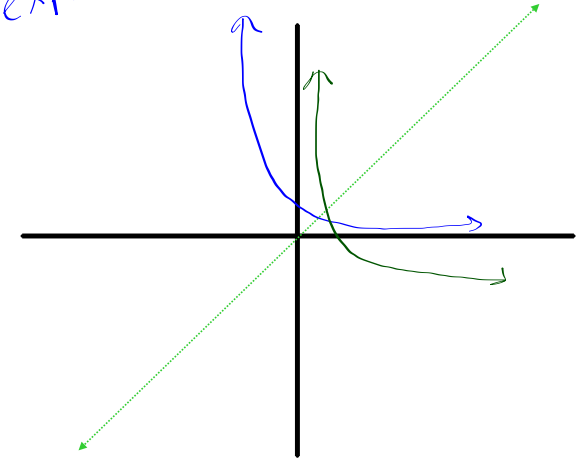
$y = \left(\frac{3}{4}\right)^x$

exp. decay

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

log decay



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

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

$\log_b x = y$

$b^y = x$

Test Conditions

Option A: Everyone can use their Reference Sheet

Option B: If you cap your score at 80%, then you can use one piece of 8.5 by 11 inch paper (both sides) with as many notes as you want. Paper must be attached to your test when you turn it in.

Tests should be taken in one sitting. If you start a page of a test in one period, then you must finish it in that same period.

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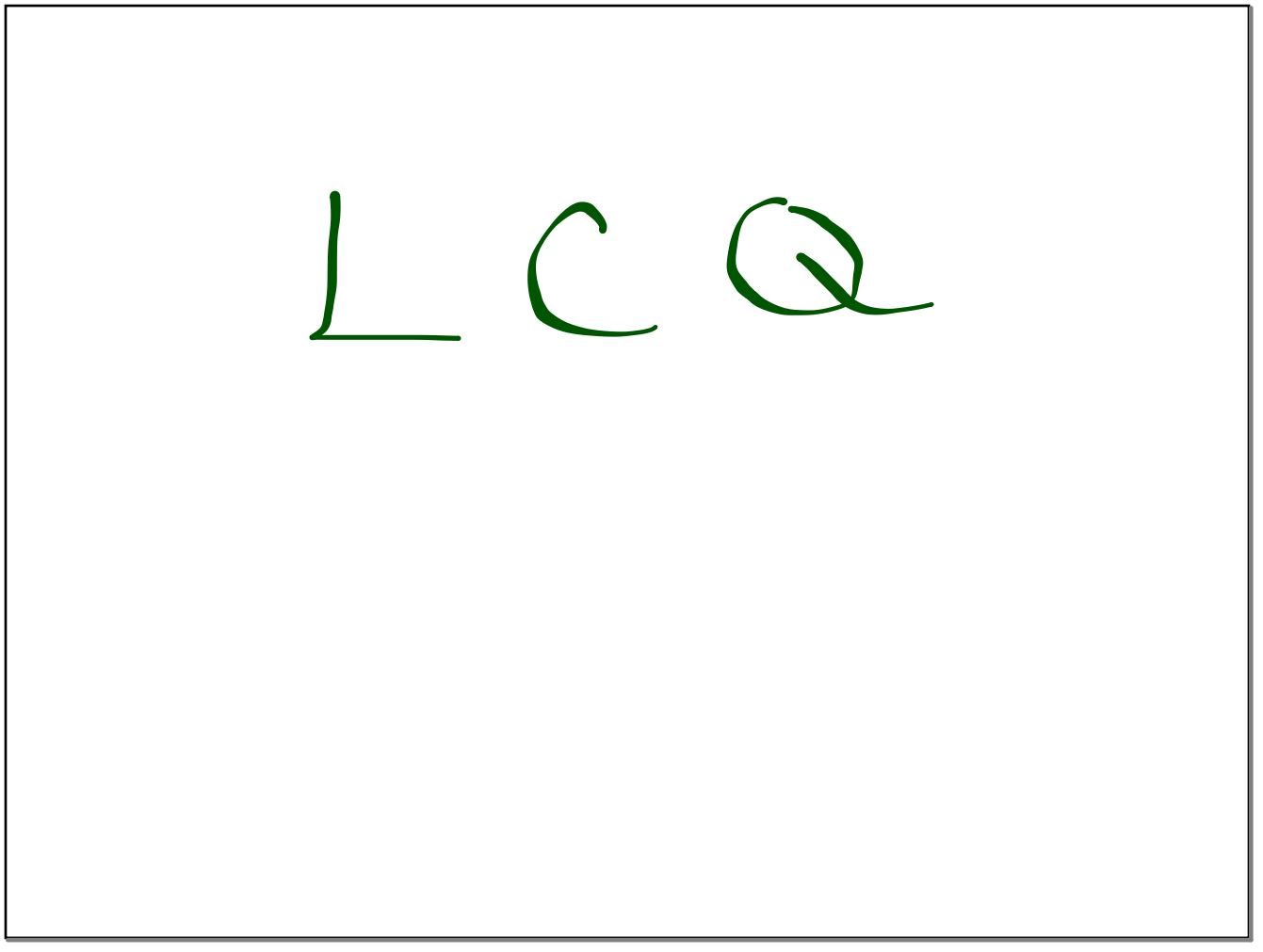

5 .....85-87, 91, 92bd, 97, 103

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