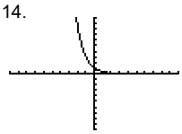
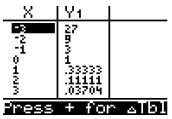
HW 4 - 2

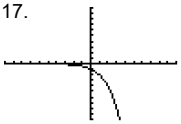
pg 370 - 371:

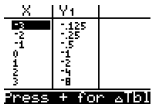
14.





17.





27. HS left 1

28. HS right 1

29. VS down 3

30. VS up 1

31. r_{origin}
VS up 4

32. HS right 1
VS down 3

Pg 357

62. a. One-to-One

b. $f^{-1}(x)=\frac{x+3}{5-2x}$ or $f^{-1}(x)=\frac{-x-3}{2x-5}$

Nov 14-5:18 PM

4.3 Common Logarithms

= log base 10

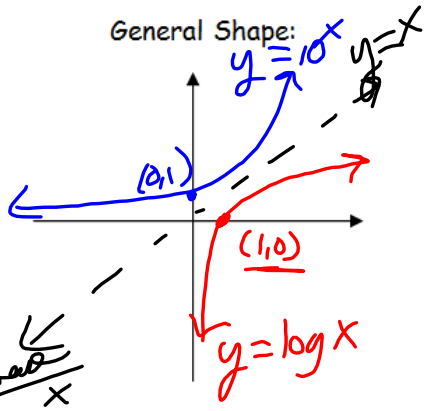
$y=\log_b x \longleftrightarrow b^y=x$

PreCalc
Unit 4 Day 3

The inverse of $y = a^x$

① graph $y=\log x$

General Shape:



$y = a^x$

D: $\{x \mid x \in \mathbb{R}\}$

R: $\{y \mid y > 0\}$

Quadrants I & II

each exponential graph contains the point: (0,1)

asymptote → $y=0$

Find Inverse

$y=10^x$

$x=10^y$ → $y=\log_{10} x$

Nov 9-11:36 AM

$y = \log_a x$

D: $\{x \mid x > 0\}$

R: $\{y \mid y \in \mathbb{R}\}$

Quadrants I & IV

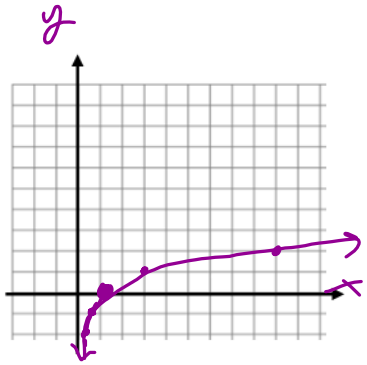
each logarithmic graph contains the point: (1,0)

asymptote → $x = 0$ (y- axis)

Graph $y = \log_3 x$ (no calc)

$3^y = x$

x	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9
y	-2	-1	0	1	2



Nov 9-11:37 AM

Logarithms with base 10 → $y = \log x$ $y = \log_{10} x$

Exponent of 10

$\log_{10} 1000 = 3$ $10^? = 1000$ $\log 100 = 2$ $10^?$ $\log 10 = 1$

$\log 1 = 0$ $10^0 = 1$ $\log 0.1 = -1$ $\log .01 = -2$

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

Nov 9-11:38 AM

Use your calculator to find these common logs to 4 decimal places:

log 4 = .6021

log 128 = 2.1072

log $\frac{1}{2}$ = −.3010

Nov 9-11:38 AM

Find x to nearest hundredth:

1. log x = 2.5499

$X = 354.73$

$10^{2.5499} = ?$

2. log x = 0.4398

$X \approx 2.75$

3. log x = -0.0251

$X \approx .94$

Nov 9-11:38 AM

Write in exponential form:

1. $\log_{10} 1 = 0$ $10^0 = 1$
2. $\log .01 = -2$ $10^{-2} = .01$
3. $\log_3 81 = 4$ $3^4 = 81$
4. $\log_2 32 = 5$ $2^5 = 32$
5. $\log_A K = M$ $A^M = K$

Nov 9-11:38 AM

Write in log form:

1. $10^4 = 10{,}000$ $\log 10{,}000 = 4$
2. $10^{-2} = 0.01$ $\log .01 = -2$
3. $4^3 = 64$ $\log_4 64 = 3$
4. $3^5 = 243$ $\log_3 243 = 5$
5. $P^J = H$ $\log_P H = J$

Nov 9-11:39 AM

Evaluate without a calculator

1. $\log_8 64 = 2$

2. $\log_4 \frac{1}{2} = x$ $\quad 4^x = \frac{1}{2}$ $\quad -1/2$

3. $\log_2 32 = x$ $\quad 2^x = 32$ $\quad x = 5$

4. $\log_9 3 = x$ $\quad 9^x = 3$ $\quad x = 1/2$

$\log_4 2 = x$ $\quad \sqrt{4} = 2$

$4^{1/2} = 2$

Nov 9-11:40 AM

Change of Base Law:

$$\log_B A = \frac{\log A}{\log B}$$

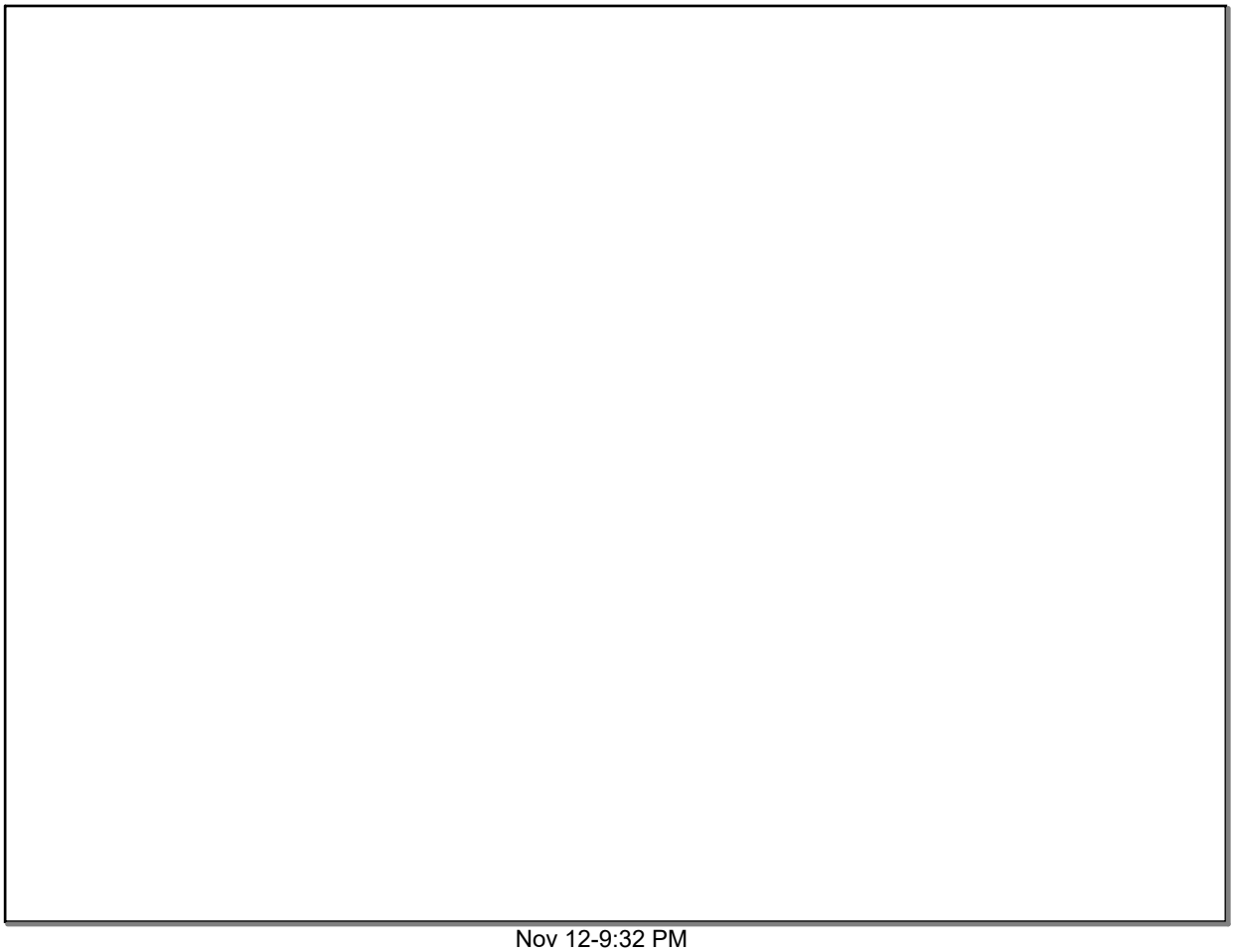
Use your calculator and the change of base law to evaluate the following to 4 decimal places:

1. $\log_2 21 = \frac{\log 21}{\log 2} = 4.3923$

2. $\log_5 13 = \frac{\log 13}{\log 5} = 1.5937$

3. $\log_4 73 = \frac{\log 73}{\log 4} = 3.0949$

Nov 9-11:40 AM



Nov 12-9:32 PM