

pg 370 - 371: **HW 4 - 2**

14.

17.

27. HS left 1
28. HS right 1
29. VS down 3
30. VS up 1
31. F origin
VS up 4
32. HS right 1
VS down 3

Pg 357
62. a. One-to-One
b. $f^{-1}(x) = \frac{x+3}{5-2x}$
 $f^{-1}(x) = \frac{-x-3}{2x-5}$

Give y values as fractions
Press $\frac{\Box}{\Box}$ for $\frac{\Box}{\Box}$

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Common Logarithms

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4.3 Common Logarithms
PreCalc
Unit 4 Day 3

The inverse of $y = a^x$ is $y = \log_a x$

$y = a^x$
D: $(-\infty, \infty)$
R: $(0, \infty)$
each exponential graph contains the point: $(0, 1)$
asymptote $\rightarrow y = 0$

$y = 2^x$

General Shape:

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$y = \log_a x$
D: $(0, \infty)$
R: $(-\infty, \infty)$
each logarithmic graph contains the point: $(1, 0)$
asymptote $\rightarrow x = 0$
Graph $y = \log_3 x$ Alpha Window

x	1	3	9
y	0	1	2

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Logarithms with base 10 $\rightarrow y = \log x$

Exponent of 10 "10 to what power is ___"

$\log 1000 = 3$	$\log 100 = 2$	$\log 10 = 1$
$\log 1 = 0$	$\log 0.1 = -1$	$\log .01 = -2$

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

$\log 4 = .6021$ $\log 128 = 2.1072$ $\log \frac{1}{2} = -.3010$

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Find x to nearest hundredth: **2nd log**

1. $\log x = 2.5499$
 $10^{2.5499} = 354.73$
2. $\log x = 0.4398$
 $10^{0.4398} = 2.75$
3. $\log x = -0.0251$
 $10^{-0.0251} = .94$

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Write in exponential form:

1. $\log_1 1 = 0$
 $10^0 = 1$
2. $\log_{10} .01 = -2$
 $10^{-2} = .01$
3. $\log_3 81 = 4$
 $3^4 = 81$
4. $\log_2 32 = 5$
 $2^5 = 32$
5. $\log_A K = M$
 $A^M = K$

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Write in log form:

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

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Evaluate without a calculator

1. $\log_8 64$
 $8^x = 64$ $x = 2$
2. $\log_4 \frac{1}{2}$
 $4^x = \frac{1}{2}$ $x = \frac{1}{2}$
3. $\log_2 32$
 $2^x = 32$ $x = 5$
4. $\log_9 3$
 $9^x = 3$ $x = \frac{1}{2}$

* fractions!
* exponent
* negative

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Change of Base Law:

$$\log_a b = \frac{\log b}{\log a}$$

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

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