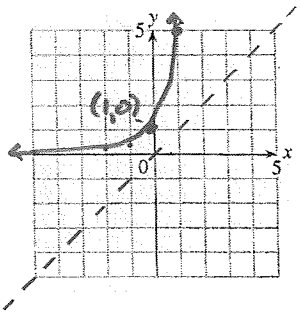
Name _____ Date _____

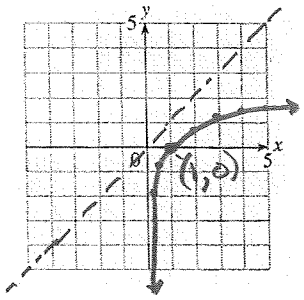
Practice 5.2: Logarithmic Functions

1. Given the following functions and their graphs, find and sketch the graph of the inverse functions.

a. $y = 5^x$



b. $y = ln\,(x)$



2. Use the definition of a logarithm to rewrite the exponential equations as logarithmic equations.

a. $5^3 = 125$

b. $81^{1/4} = 3$

c. $6^{-2} = \frac{1}{36}$

d. $2^6 = 64$

e. $e^0 = 1$

f. $e^3 = 20.086$

3. Evaluate the expressions without a calculator

a. $log_2(16)$

b. $log_3(81)$

c. $log_{25}(5)$

d. $log_4\left(\frac{1}{16}\right)$

e. $log_a(a^3)$

f. $log_a\left(\frac{1}{a}\right)$

4. Use a calculator to evaluate the expressions. Include three decimal places.

a. $log_{10}(425)$

b. $log_{10}(0.205)$

c. $log_{10}\left(\frac{3}{4}\right)$

d. $ln(100)$

e. $ln(0.01)$

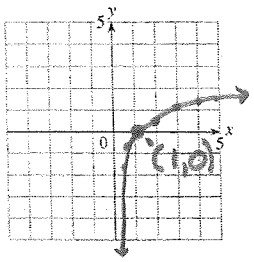
f. $ln\left(\frac{1}{e}\right)$

g. $log(425)$

h. $ln\left(\sqrt{5}-2\right)$

i. $log\,(10^5)$

5. Use the graph of $y = ln(x)$ to match the functions with their graphs.



1. $f(x) = ln(x) + 2$

2. $f(x) = -ln(x)$

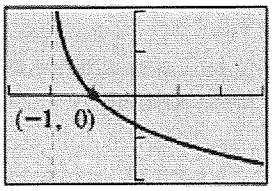
3. $f(x) = -ln(x + 2)$

4. $f(x) = ln(x - 1)$

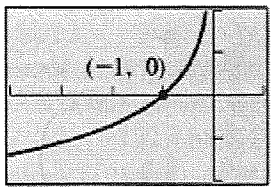
5. $f(x) = ln(1 - x)$

6. $f(x) = -ln(-x)$

(a)



(b)



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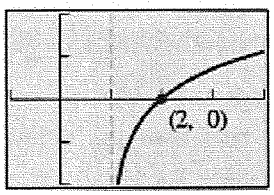

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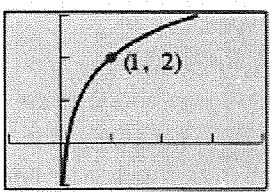
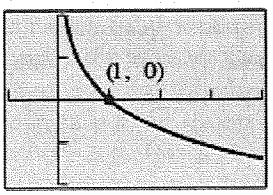


(e)



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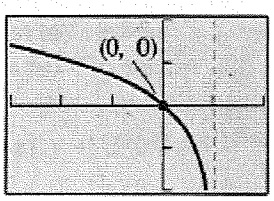


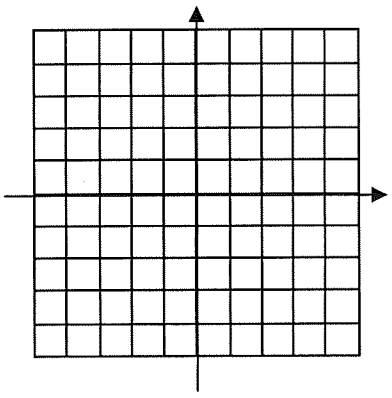
6. Sketch and label the following graphs on the axes below.

a) $f(x) = log_2(x)$

b) $f(x) = log_2(-x)$

c) $f(x) = log_2(x) + 1$

d). $f(x) = -log_2(x - 1)$



7. Use the table of points below to decide which of the following statements are true:

a) y is an exponential function of x.

b) y is an logarithmic function of x.

c) x is an exponential function of y.

d) y is a linear function of x.

x	y
1	0
2	1
8	3