

Secondary Math III
Unit 9 Practice Exam

Name Key
Period _____

Multiple Choice. 2 points each, show work for credit.

1. Which function is the inverse for $f(x) = \ln x$?

- a. e^x
- b. e^{-1}
- c. $\log e$
- d. $\log x$

$\log_e x \rightarrow e^x$

2. Rewrite $\log_2 \frac{1}{32} = -5$ in exponential form.

- a. $2^{-5} = \frac{1}{32}$
- b. $2^{\frac{1}{32}} = -5$
- c. $\frac{1}{32}^2 = -5$
- d. $-5^{\frac{1}{32}} = 2$

basu
ahs
exp.

3. Evaluate $\log_{16} 4$

- a. $-\frac{1}{2}$
- b. 2
- c. -2
- d. $\frac{1}{2}$

$16^{\frac{1}{2}} = 4$ $16^{1/2} = 4$ $\sqrt{16} = 4$

4. Use a calculator to find $\ln 6$

- a. 3.495
- b. 1.792
- c. 1.609
- d. 8.047

plug in calc.

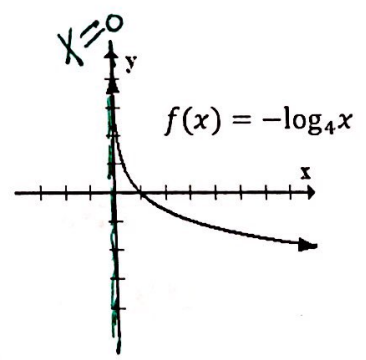
5. Given the function: $f(x) = 3^x$, pick the function that is reflected over the y-axis.

- a. $g(x) = -3^x$
- b. $g(x) = 3^{-x}$
- c. $g(x) = 3^x - 1$
- d. $g(x) = 3^{x-1}$

neg. to x.

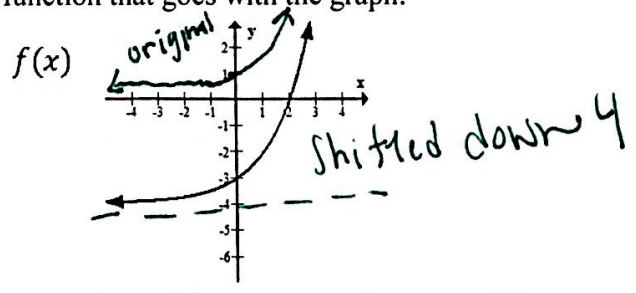
6. Using the graph & function to the right, find the equation of the vertical asymptote.

- a. $y = -1$
- b. $x = 0$
- c. $x = -1$
- d. $y = 0$



7. The graph of $f(x)$ is show to the left. Pick the correct function that goes with the graph.

- a. $f(x) = 2^x - 4$
- b. $f(x) = 2^x + 1$
- c. $f(x) = 2^{x-1}$
- d. $f(x) = 2^{-x}$



ee Response. Show All Work for Credit!

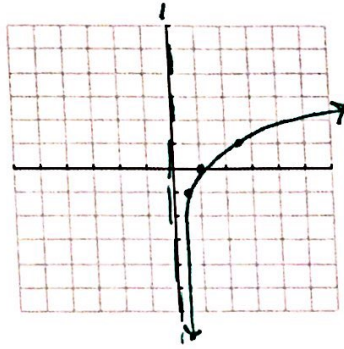
8. Fill in the x/y t-chart for the given exponential function, round to one decimal place. Using the exponential function fill in the x/y t-chart and graph the given logarithmic function. Then find the listed information. (6 points)

$$f(x) = e^x$$

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

X	Y
-1	.4
0	1
1	2.7

X	Y
.4	-1
1	0
2.7	1



Domain $(0, \infty)$

Range $(-\infty, \infty)$

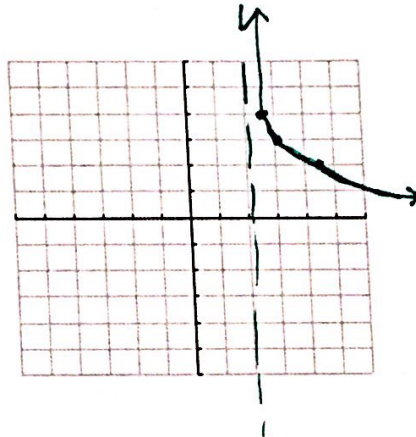
VA $x=0$

9. Using number 8 to help you, graph the following function on the given coordinate grid. Find the transformations and the listed information. (7 points)

$$g(x) = -\ln(x - 2) + 3$$

Transformations:

flip over x-axis
right 2
up 3



Domain $(2, \infty)$

Range $(-\infty, \infty)$

VA $x=2$

10. Evaluate without a calculator. (2 points each)

a. $\log_4 64$

$$\frac{1}{4}^? = 64 \quad \boxed{-3}$$

b. $\log_2 4$

$$2^? = 4 \quad \boxed{2}$$

c. $\log_6 36$

$$6^? = 36 \quad \boxed{2}$$

d. $\log_{10} 10 \Rightarrow \log_{10} 10$

$$10^? = 10 \quad \boxed{1}$$

e. $\ln e$

$$\log_e e \quad \leftarrow \quad e^? = e \quad \boxed{1}$$

f. $\log_7 7$

$$7^? = 7 \quad \boxed{1}$$

11. Using a calculator find the following. Round to three decimal places. (1 point each)

a. $\ln 0.324$

$$-1.127$$

b. $\ln 2.3$

$$0.833$$

c. $\log 11$

$$1.041$$

d. $\log 25$

$$1.398$$

Rewrite the following exponential equations into logarithmic form. (2 points each)

a. $16 = 2^4$

$\log_2 16 = 4$

b. $e^0 = 1$

$\log_e 1 = 0$

$\ln 1 = 0$

c. $\frac{1}{5}^{-2} = 25$

$\log_{1/5} 25 = -2$

13. Rewrite the following logarithmic equations into exponential form. (2 points each)

a. $\log_{36} 6 = \frac{1}{2}$

$36^{1/2} = 6$

b. $\log 10 = 1$

$\log_{10} 10 = 1$

$10^1 = 10$

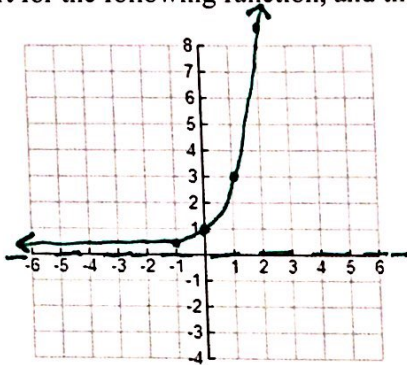
c. $\log_3 \frac{1}{3} = -1$

$3^{-1} = \frac{1}{3}$

14. Fill out the x/y t-chart for the following function, and then graph it on the given coordinate grid. Then find listed information. (7 points)

$f(x) = 3^x$

X	Y
-1	1/3
0	1
1	3
2	9



Domain $(-\infty, \infty)$

Range $(0, \infty)$

y-intercept $(0, 1)$

HA $y = 0$

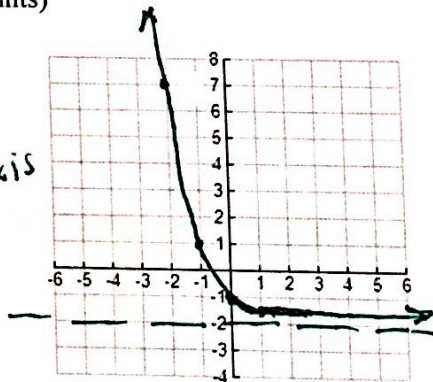
Exponential Growth, Decay, Neither?

15. Using number 14 to help you, graph the following function on the given coordinate grid. Find the transformations and the listed information. (8 points)

$g(x) = 3^{-x} - 2$

Transformations:

flip over y-axis
down 2



Domain $(-\infty, \infty)$

Range $(-2, \infty)$

y-intercept $(0, -1)$

HA $y = -2$

Exponential Growth, Decay, Neither?

16. Find the domain of the following:

$$f(x) = \ln(x+1)$$

$$x+1 > 0$$

$$\begin{matrix} -1 & -1 \end{matrix}$$

$$\boxed{x > -1}$$

$$y = \ln|x-6|$$

$$\cancel{x \neq 6}$$

$$\mathbb{R}$$

$$\ln x$$

$$x > 0$$