

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Homework: Graphing Logarithmic Functions

1) Using  $f(x) = \log x$  as the parent function, fill in the following for each of the functions below:

$$a(x) = \log x - 8$$

$$b(x) = \log(x - 4) + 9$$

$$c(x) = -\log x$$

Describe each transformation:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Domain: \_\_\_\_\_

Domain: \_\_\_\_\_

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Range: \_\_\_\_\_

Range: \_\_\_\_\_

Asymptote: \_\_\_\_\_

Asymptote: \_\_\_\_\_

Asymptote: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

Left-end Behavior:

Left-end Behavior:

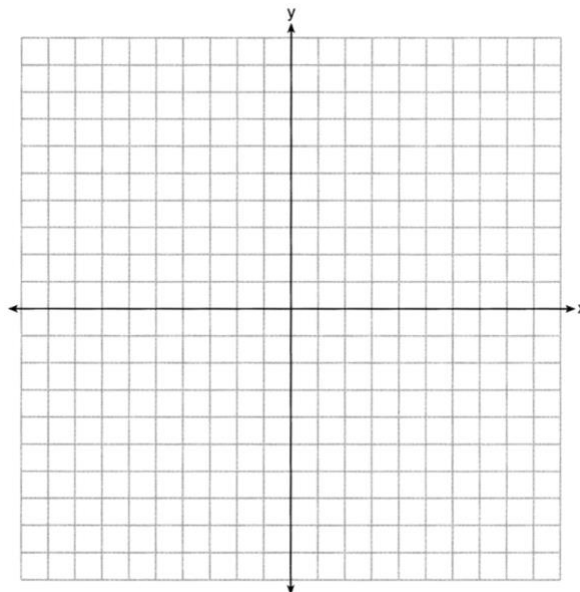
Left-end Behavior:

Right-end Behavior:

Right-end Behavior:

Right-end Behavior:

2) Using your calculator, graph  $y = \ln x$ .



3) Find the inverse of the following functions.

a)  $y = 8^x$ .

b)  $y = 4^{\frac{1}{2}x+3}$ .

4) Evaluate the following without using a calculator.

a)  $10^{\log 5} + \ln e^4 - 2 \log 10 + 8 \log_9 3$

b)  $\ln[\log_4(\log 10000)]$

5) If the graph of  $y = 3^{x-1}$  is reflected across the line  $y = x$ , what is the equation of the resulting curve?

*Looking Ahead...*

6) Using your calculator, graph or sketch the following two logarithmic equations:

$f(x) = \log(2x)$

$g(x) = \log 2 + \log x$

What do you notice about the graphs of the two equations?

---

---

---