Name: _____   Date: _____

5-6 GRAPHS OF LOGARITHMS
MATH III HOMEWORK
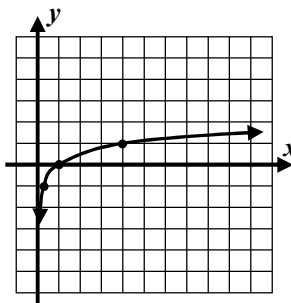
FLUENCY

1. The domain of $y = \log_3(x+5)$ in the real numbers is

   (1) $\{x \mid x > 0\}$ (3) $\{x \mid x > 5\}$

   (2) $\{x \mid x > -5\}$ (4) $\{x \mid x \geq -4\}$

   _____

2. Which of the following equations describes the graph shown below?

   (1) $y = \log_5 x$ (3) $y = \log_3 x$

   (2) $y = \log_2 x$ (4) $y = \log_4 x$

   _____

3. Which of the following represents the y-intercept of the function $y = \log_2(32-x)-1$?

   (1) 8   (3) -1

   (2) -4 (4) 4

   _____

4. Which of the following values of x is *not* in the domain of $f(x) = \log_5(10-2x)$?

   (1) -3 (3) 5

   (2) 0   (4) 4

   _____

5. Which of the following is true about the function $y = \log_4(x+16)-1$?

   (1) It has an x-intercept of 4 and a y-intercept of -1.

   (2) It has x-intercept of -12 and a y-intercept of 1.

   (3) It has an x-intercept of -16 and a y-intercept of 1.

   (4) It has an x-intercept of -16 and a y-intercept of -1.

   _____

6. Determine the domains of each of the following logarithmic functions. State your answers using any accepted notation. Be sure to show the inequality that you are solving to find the domain and the work you use to solve the inequality.

(a) $y = \log_5(2x - 1)$

(b) $y = \log(6 - x)$

7. Graph the logarithmic function $y = \log_4 x$ on the graph paper given. For a method, see *Exercise #1*.
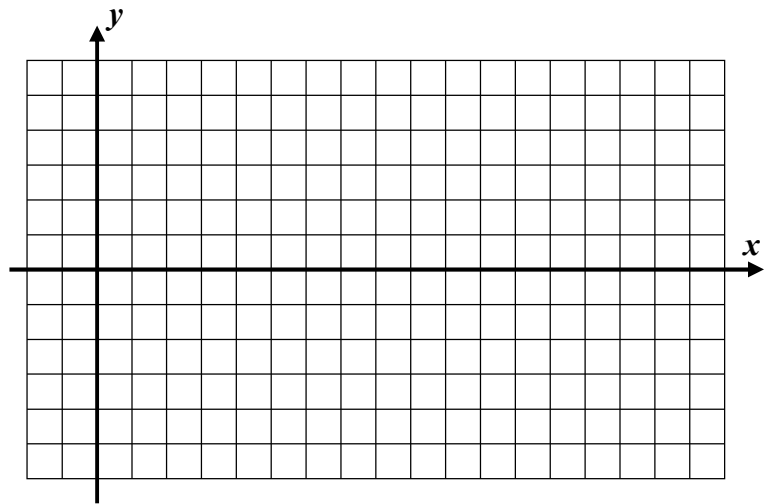
REASONING

8. Logarithmic functions whose bases are larger than 1 tend to increase **very slowly** as x increases. Let's investigate this for $f(x) = \log_2(x)$.

(a) Find the value of $f(1)$, $f(2)$, $f(4)$, and $f(8)$ without your calculator.

(b) For what value of x will $\log_2(x) = 10$? For what value of x will $\log_2(x) = 20$?