

Practice Problems

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

(1) $\{x | x > 0\}$

(3) $\{x | x > 5\}$

$x+5 > 0$

(2) $\{x | x > -5\}$

(4) $\{x | x \geq -4\}$

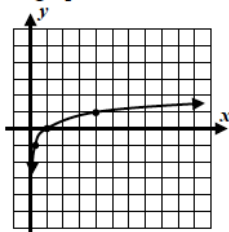
$x > -5$

(2)

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) $y = \log_4 x$

(4)

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

(1) 8

(3) -1

\checkmark when $x = 0$

(2) -4

(4) 4

$$\begin{aligned} y &= \log_2(32-0) - 1 \\ &= \log_2(32) - 1 \\ &= 5 - 1 = 4 \end{aligned}$$

(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

* plug in your answer choice and one will be undefined

(2) 0

(4) 4

(3)

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.

* graph the function and use the trace function. *

(2)

6. Determine the domains of each of the following logarithmic functions. State your answers in set-builder 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) $y = \log_5(2x - 1)$

$$2x - 1 > 0$$

$$2x > 1$$

$$x > \frac{1}{2}$$

$$\{x \mid x > \frac{1}{2}\}$$

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

$$6 - x > 0$$

$$-x > -6$$

$$x < 6$$

$$\{x \mid x < 6\}$$

7. Determine the domain of each of the following logarithmic functions. State your answers in interval 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) $y = \log_2(16 - x^2)$

$$16 - x^2 > 0$$

Solution Set (-4, 4)

$$(4 - x)(4 + x) > 0$$

$$4 - x > 0 \quad | \quad 4 + x > 0$$

$$4 > x \quad | \quad x > -4$$

(b) $y = \log_4(x^2 - 5x)$

$$x^2 - 5x > 0$$

Solution Set $(-\infty, 0) \cup (5, \infty)$

$$x(x - 5) > 0$$

$$x - 5 > 0$$

$$x > 5$$

check graph

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

Show table here.

