

Logarithmic Functions  
Unit Post-Test  
2017-18

1. What is the value of  $x$  if  $\log_6(4x - 7) = 0$ ?

- |            |            |
|------------|------------|
| a. $x = 0$ | c. $x = 2$ |
| b. $x = 1$ | d. $x = 3$ |

2. Which logarithmic form is equivalent to  $10^{3.5} = 3162$ ?

- |                           |                           |
|---------------------------|---------------------------|
| a. $\log_{10} 3162 = 3.5$ | c. $\log_{10} 3.5 = 3162$ |
| b. $\log_{3.5} 10 = 3162$ | d. $\log_{3162} 3.5 = 10$ |

3.

What is the value of  $x$  if  $15 = \log_4 4^{3x}$ ?

- |            |            |
|------------|------------|
| a. $x = 3$ | c. $x = 5$ |
| b. $x = 4$ | d. $x = 6$ |

4.

What is the domain of the function  $h(x) = 5^x$ ?

- |                                    |                                    |
|------------------------------------|------------------------------------|
| a. all real numbers                | c. all real numbers greater than 1 |
| b. all real numbers greater than 0 | d. all real numbers greater than 5 |

5.

What is the value of  $x$  if  $\log_4(3x - 2) = 3$ ?

- |             |             |
|-------------|-------------|
| a. $x = 5$  | c. $x = 2$  |
| b. $x = -6$ | d. $x = 22$ |

6.

Calculate the value of  $\log_2 78$  to the nearest tenth.

- |        |        |
|--------|--------|
| a. 1.7 | c. 3.7 |
| b. 6.3 | d. 2.3 |

7.

Solve  $\log_8 x = \log_8 10^{-1}$  for  $x$ .

- |                  |                  |
|------------------|------------------|
| a. $x = 10^{-2}$ | c. $x = 10^{-8}$ |
| b. $x = 10^{-7}$ | d. $x = 10^{-1}$ |

8. Find the inverse of  $f(x) = 2x - 4$ .

a.  $f^{-1}(x) = 2x - 4$

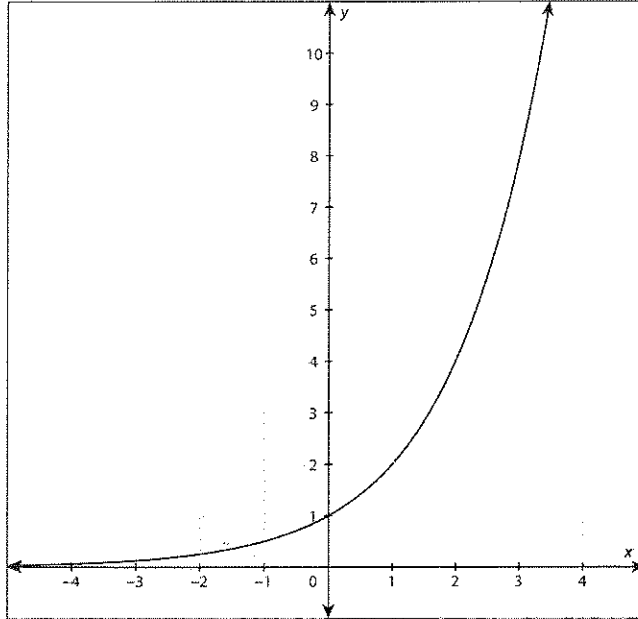
b.  $f^{-1}(x) = (x+4)/2$

c.  $f^{-1}(x) = 4x - 2$

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

9.

What is the asymptote of the graphed exponential function?



a.  $x = 0$

b.  $x = 1$

c.  $y = 0$

d.  $y = 1$

10.

Simplify the expression  $2 \log x + \log(x + 1)$ .

a.  $\log x^2 - x + 1$

b.  $\log x^2(x + 1)$

c.  $\log\left(\frac{x^2}{x+1}\right)x^2(x+1)$

d.  $\log x(x + 1)^2$

11.

What is the rewritten form of  $3 \log t - \log(t - 5)$ ?

a.  $\log \frac{t^2 - 3}{t + 5}$

b.  $3 \log t^2(t + 5)$

c.  $\log \frac{t^3}{t - 5}$

d.  $\log t(t + 5)^3$

12. If the point (3,8) is on the graph of  $f(x)=2^x$ , what point is on the graph of the inverse?

a. (-3, -8)

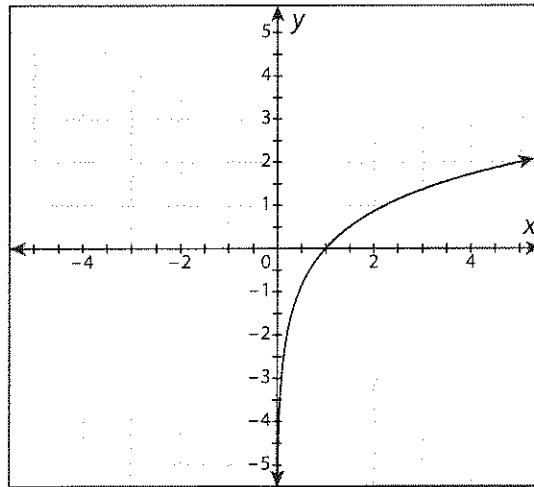
b. (-8, -3)

c. (8,3)

d. (3,8)

13.

What are the asymptote and x-intercept for the following graph?



a. asymptote:  $x = -2$ ; x-intercept:  $(0, 0)$

b. asymptote:  $x = 0$ ; x-intercept:  $(1, 0)$

c. asymptote:  $x = 1$ ; x-intercept:  $(1, 2)$

d. asymptote:  $x = -1$ ; x-intercept:  $(0, 1)$

14.

The graphs of  $y = 3^x$  and  $y = \log_3 x$  are:

A. Reflected across the line  $y = 0$ .

B. Reflected across the line  $x = 0$ .

C. Reflected across the line  $y = x$ .

D. Identical.

15.

The equation  $2 = \log_{x+1}(y + 1)$  can be written as:

A.  $y = \frac{2}{\log_{x+1}} - 2$

B.  $y = (x + 1)^2 - 1$

C.  $y = 2(x + 1) - 1$

D.  $y = \log_{x+1} 2 - 1$