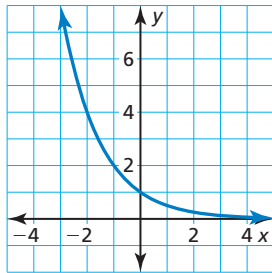


6 Cumulative Assessment

1. Fill in the exponent of x with a number to simplify the expression.

$$\frac{x^{5/3} \cdot x^{-1} \cdot \sqrt[3]{x}}{x^{-2} \cdot x^0} = x^{\square}$$

2. The graph of the exponential function f is shown. Find $f(-7)$.



3. Student A claims he can form a linear system from the equations shown that has infinitely many solutions. Student B claims she can form a linear system from the equations shown that has one solution. Student C claims he can form a linear system from the equations shown that has no solution.

$$3x + y = 12$$

$$3x + 2y = 12$$

$$6x + 2y = 6$$

$$3y + 9x = 36$$

$$2y - 6x = 12$$

$$9x - 3y = -18$$

- Select two equations to support Student A's claim.
 - Select two equations to support Student B's claim.
 - Select two equations to support Student C's claim.
4. Fill in the inequality with $<$, \leq , $>$, or \geq so that the system of linear inequalities has no solution.

Inequality 1 $y - 2x \leq 4$

Inequality 2 $6x - 3y \square - 12$

5. The second term of a sequence is 7. Each term of the sequence is 10 more than the preceding term. Fill in values to write a recursive rule and an explicit rule for the sequence.

$$a_1 = \square, a_n = a_{n-1} + \square$$

$$a_n = \square n - \square$$

6. A data set consists of the heights y (in feet) of a hot-air balloon t minutes after it begins its descent. An equation of the line of best fit is $y = 870 - 14.8t$. Which of the following is a correct interpretation of the line of best fit?
- (A) The initial height of the hot-air balloon is 870 feet. The slope has no meaning in this context.
 - (B) The initial height of the hot-air balloon is 870 feet, and it descends 14.8 feet per minute.
 - (C) The initial height of the hot-air balloon is 870 feet, and it ascends 14.8 feet per minute.
 - (D) The hot-air balloon descends 14.8 feet per minute. The y -intercept has no meaning in this context.
7. Select all the functions whose x -value is an integer when $f(x) = 10$.

$$f(x) = 3x - 2$$

$$f(x) = -2x + 4$$

$$f(x) = \frac{3}{2}x + 4$$

$$f(x) = -3x + 5$$

$$f(x) = \frac{1}{2}x - 6$$

$$f(x) = 4x + 14$$

8. Place each function into one of the three categories. For exponential functions, state whether the function represents *exponential growth*, *exponential decay*, or *neither*.

Exponential	Linear	Neither
$f(x) = -2(8)^x$	$f(x) = 15 - x$	$f(x) = \frac{1}{2}(3)^x$
$f(x) = 6x^2 + 9$	$f(x) = 4(1.6)^{x/10}$	$f(x) = x(18 - x)$
$f(x) = 3\left(\frac{1}{6}\right)^x$	$f(x) = -3(4x + 1 - x)$	$f(x) = \sqrt[4]{16} + 2x$

9. How does the graph shown compare to the graph of $f(x) = 2^x$?

