



Algebra I Unit 5: Two-Variable Equations and Inequalities

1. Which of these ordered pairs is **not** a solution of the equation $2x - 5 = -9 + y$?

- (A) (3, 10)
- (B) (-3, -2)
- (C) (1, 6)
- (D) (2, 6)

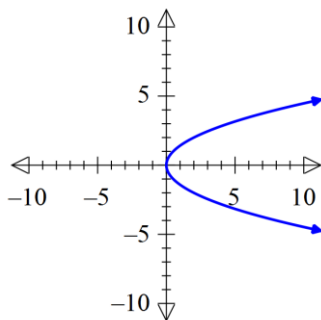
2. Given the ordered pairs (3, -1), (0, 2), (-5, -8) and (4, 3) for a particular function, which of the following are the domain and range of this function?

- (A) Domain: {3, 0, -5, 4} and Range: {-1, 2, -8, 3}
- (B) Domain: {-1, 2, -8, 3} and Range: {3, 0, -5, 4}
- (C) Domain: {3, -1, 0, 2} and Range: {-5, 8, 4, 3}
- (D) None of the above

3. Which of the following sets of ordered pairs is **not** a function?

- (A) {(1, 3), (2, 3), (3, 5)}
- (B) {(2, 4), (4, 2), (1, 2)}
- (C) {(6, 0), (0, 4), (4, 0)}
- (D) {(2, 6), (6, 2), (2, 1)}

4. Why is the graph below **not** considered a function?



- (A) It fails the horizontal line test.
- (B) It fails the vertical line test.
- (C) Each x value only has one y value.
- (D) It's not oriented facing up.



5. Which of the following statements correctly describes $f(x - 2) = 3$?

- (A) The output is $x - 2$ when the input is 3.
- (B) The output is 3 when the input is $x - 2$.
- (C) The output is $f(x - 2)$ when the input is 3.
- (D) The output is $f(3)$ when the input is $x - 2$.

6. If $f(x) = 5x - 2$, find $f(-2) - f(3)$.

- (A) 1
- (B) -5
- (C) -25
- (D) 5

7. What's the formula for the general term, a_n , of the sequence 4, 7, 10, 13... starting at $n = 1$?

- (A) $a_n = 3n + 4$
- (B) $a_n = 3n + 1$
- (C) $a_n = 4n - 5$
- (D) $a_n = 4n + 3$

8. Which of the following is an arithmetic sequence?

- (A) 1, -2 , -5 , -8 ...
- (B) 1, 2, 4, 8 ...
- (C) $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}$...
- (D) 1, 2, 4, 7 ...

9. What's the 10th term of the geometric sequence $\frac{3}{4}, \frac{3}{2}, 3, 6$...?

- (A) 12
- (B) 60
- (C) 384
- (D) 24



10. Given the recursive rule $a_n = 2a_{n-1} + 1$ and $a_1 = 3$, what is a_3 ?

- (A) 15
- (B) 7
- (C) 3
- (D) 5

11. Which of the following expresses the explicit formula for the sequence with the recursive formula of $a_n = a_{n-1} + 4$ and $a_1 = -2$?

- (A) $a_n = 4n - 2$
- (B) $a_n = 4n - 6$
- (C) $a_n = -2n - 2$
- (D) $a_n = -2n$

12. Sally Shmoop is growing a plant for the school science fair. When she first measured it, the plant was 5 cm tall. Sally notices that it's getting taller by 2 cm each week. Which of the following equations fits this scenario?

- (A) $f(x) = 5x + 2$
- (B) $f(x) = 2x - 5$
- (C) $f(x) = 7x$
- (D) $f(x) = 2x + 5$

13. Farmer Shmoop's rectangular garden is 4 feet longer than it is wide. If a diagonal from one corner to the opposite corner is 68 feet, what equation can be used to solve for the lengths of the sides of the garden?

- (A) $4x^2 = 68^2$
- (B) $4x = 68$
- (C) $x^2 + (x + 4)^2 = 68^2$
- (D) $x^2 + (x + 4)^2 = 68$



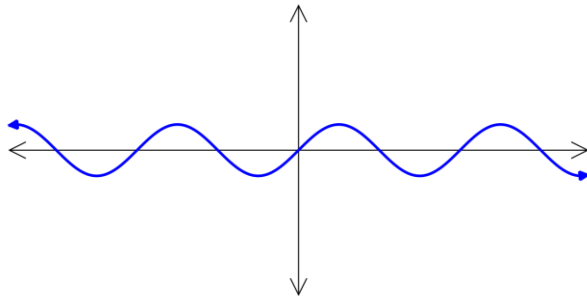
14. Professor Shmoop's student left him a petri dish full of bacteria in the science lab. He quickly counted the colony and found 125 bacteria in the dish. In one hour, he counted again and found that the colony had increased by 12%. Which of the following is an exponential function that represents this scenario?

- (A) $f(x) = 125(0.12)^x$
- (B) $f(x) = 125(1.12)^x$
- (C) $f(x) = 125(0.88)^x$
- (D) $f(x) = 0.12(125)^x$

15. If $f(x) = 2x - 4$ and $g(x) = 4x - 2$, which of the following represents $f(x) - g(x)$?

- (A) $f(x) - g(x) = -2x - 6$
- (B) $f(x) - g(x) = -2x - 2$
- (C) $f(x) - g(x) = 2x + 2$
- (D) $f(x) - g(x) = 2x - 6$

16. Does this function have an inverse function and why?



- (A) Yes, it passes the horizontal line test
- (B) Yes, it passes the vertical line test
- (C) No, it doesn't pass the horizontal line test
- (D) No, it doesn't pass the vertical line test



17. The graph of a one-to-one function contains the points $(-3, 2)$, $(5, -1)$, $(0, 7)$, and $(-9, -2)$. Which of the following points will the graph of the inverse function contain?

- (A) $(3, -2)$
- (B) $(-2, 3)$
- (C) $(0, -7)$
- (D) $(-2, -9)$

18. Which of the following is the inverse function for $f(x) = \frac{1}{2}x + 3$?

- (A) $f^{-1}(x) = \frac{1}{2}x - 3$
- (B) $f^{-1}(x) = 2x + 3$
- (C) $f^{-1}(x) = 2x - 3$
- (D) $f^{-1}(x) = 2x - 6$