

1. Which statement about the graph of  $y = \frac{1}{4}(\frac{3}{4})^x$  true?
- A. The coordinates of the x-intercept are  $(\frac{1}{4}, 0)$ .
  - B. The equation of the asymptote is  $y = 0$ .
  - C. The coordinates of the y-intercept are  $(0, \frac{3}{4})$ .
  - D. The graph is increasing from left to right.

2. Which expression is equivalent to  $(16m^8n^{12})^{\frac{1}{4}}$  for all positive values of p and q ?
- A.  $2m^2n^3$
  - B.  $2m^4n^8$
  - C.  $4m^2n^3$
  - D.  $4m^4n^3$

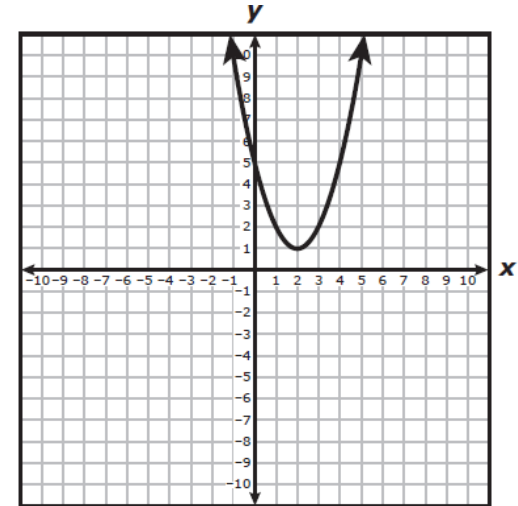
3. The number of bacteria in petri dish originally 46. The bacteria population of the dish doubles every hour. Which function best model the population after  $t$  hours ?
- A.  $p(t) = 46(2)^t$
  - B.  $p(t) = 46(\frac{1}{2})^t$
  - C.  $p(t) = 46 + (2)^t$
  - D.  $p(t) = 46t^2$

4. Which expression is equivalent to  $(p^2 - 3p + 4)(p - 2)$  ?
- C.  $p^3 - p^2 + 10p - 8$
  - D.  $p^3 + p^2 + 2p - 8$
  - C.  $p^3 - 5p^2 + 10p - 8$
  - D.  $p^3 + 5p^2 - 2p - 8$

5. What is the range of  $y = x^2 + 8x + 20$  ?
- A.  $y \geq 4$
  - B.  $y \leq -4$
  - C.  $x \leq -4$
  - D.  $x \geq 4$

6. Which statement about  $g(x) = x^2 - 64$  is true?
- A. The zeros, -8 and 8, can be found when  $0 = (x - 8)(x + 8)$
  - B. The only zero, 32, can be found when  $0 = (x - 32)^2$
  - C. The zeros, -32 and 32, can be found when  $0 = (x - 32)(x + 32)$
  - D. The only zero, 8, can be found when  $0 = (x - 8)^2$

7. How many zeros does the quadratic graph below has?



- A. 0
- B. 1
- C. 2
- D. 4

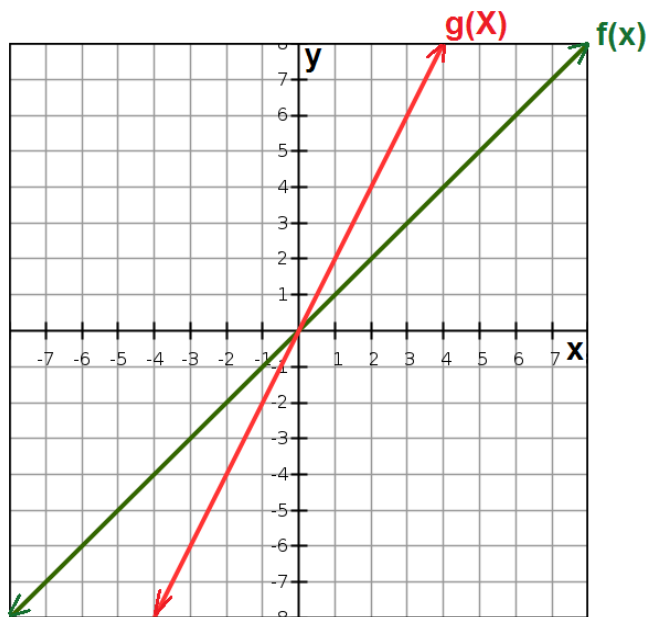
8. In a sequence of numbers,  $a_2 = -3$ ,  $a_3 = 1$ ,  $a_4 = 5$ , and  $a_5 = 9$ . Based on this information, which equation can be used to find the  $n_{th}$  term in the sequence,  $a_n$  ?

- A.  $a_n = -4n - 11$
- B.  $a_n = 4n + 11$
- C.  $a_n = 4n - 11$
- D.  $a_n = -4n + 11$

9. Jose bought a car in 2014 for \$5000 , the price of the car decreased at a rate of 8% per year , which function model the price of the car  $x$  years after 2014?

- A.  $p(x) = 5000(1.08)^x$
- B.  $p(x) = 5000(x)^{0.92}$
- C.  $p(x) = 5000(0.92)^x$
- D.  $p(x) = 5000 - 0.92x$

10. The graphs of linear functions  $f$  and  $g$  are shown on the grid. Which function is best represented by the graph of  $g$ ?



- A.  $g(x) = 2f(x)$
- B.  $g(x) = f(x) - 2$
- C.  $g(x) = f(x) + 2$
- D.  $g(x) = \frac{1}{2}f(x)$

11. The table shows the linear relationship between the height of a river in feet and the number of days since January 1st.

day	0	1	3	6	10
height ( ft )	45	61	93	141	205

Based on the table, what was the rate of change of the height of the river in feet and per day?

Answer : \_\_\_\_\_ ft / day

12. The graph of  $g(x) = x^2$  was transformed to create the graph of  $h(x) = \frac{1}{2}x^2 - 2$  Which of these describes the transformation from the graph of  $g$  to the graph of  $h$ ?

- A. Horizontal stretch and shifting up.
- B. Vertical stretch and shifting down.
- C. Horizontal stretch and shifting down.
- D. Vertical stretch and shifting up.

13. What is the domain  $x = 29$  ?

- A. All real numbers.
- B. All real numbers greater than or equal to 29
- C. {29}
- D. All real numbers less than or equal to 29