

End of Year Chapter 1 Review

Indicate the answer choice that best completes the statement or answers the question.

1. Given $f(x) = x^2 + 2x$, find $f(a - 3)$.

- a. $a^2 - 4a + 3$ b. $a^2 + 2a - 15$
 c. $a^2 + 8a + 3$ d. $a^2 - 4a + 6$

2. Find the zero(s) of $f(x) = x^2 - 3x - 108$.

- a. -9, 12 b. -12, 9
 c. 36 d. -108

3. Find $f(-8)$ for $f(x) = \begin{cases} -4|x + 3| & \text{if } x < -2 \\ -8 & \text{if } x \geq -2 \end{cases}$?

- a. -2 b. -20
 c. 20 d. 35

4. **FLARES** The height in feet of a flare t seconds after it is shot is modeled by $h(t) = -16t^2 + 104t + 1.5$. Find its average speed from 4 to 6 seconds.

- a. -28 ft/sec b. -36 ft/sec
 c. -56 ft/sec d. -112 ft/sec

5. Which of the following results in the graph of

$f(x) = \sqrt{x}$ being expanded horizontally, expanded vertically by a factor of 3, and reflected in the x -axis?

- a. $f(x) = -3\sqrt{0.5x}$ b. $f(x) = -0.5\sqrt{3x}$
 c. $f(x) = 3\sqrt{-0.5x}$ d. $f(x) = 0.5\sqrt{-3x}$

6. Given $h(x) = \lceil \lceil x \rceil \rceil$, what translations occur in the graph of $h(x) = \lceil \lceil x - 8 \rceil \rceil + 2$?

- a. left 8 units, up 2 units b. left 2 units, down 8 units
 c. right 8 units, up 2 units d. right 2 units, down 8 units

7. If $f(x) = x^2 + 1$ and $g(x) = x + 2$, find $[f \circ g](x)$.

- a. $[f \circ g](x) = x^2 + 3$
 b. $[f \circ g](x) = x^2 + 5$
 c. $[f \circ g](x) = x^2 + 4x + 4$
 d. $[f \circ g](x) = x^2 + 4x + 5$

8. Find the inverse of $f(x) = \frac{1}{x-2}$.

- a. $f^{-1}(x) = \frac{1}{x-2}$ b. $f^{-1}(x) = \frac{1}{x} + 2$
 c. $f^{-1}(x) = \frac{3x+4}{x^2}$ d. $f^{-1}(x) = \frac{1}{x} - 2$

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9. Which function is a one-to-one function?

- a. $f(x) = \frac{3}{2x-5}$ b. $f(x) = |3x+1|$
 c. $f(x) = \frac{3x+4}{x^2}$ d. $f(x) = \lfloor 2x \rfloor$

10. Choose the statement that is true for the graph of $f(x) = x^3 - 12x$.

- a. $f(x)$ increases for $x > -2$.
 b. $f(x)$ decreases for $x > -2$.
 c. $f(x)$ increases for $x > 2$.
 d. $f(x)$ decreases for $x < 2$.

11. Which is true for the graph of $f(x) = -x^3 + 3x - 2$?

- a. relative maximum of 0 at $x = 1$
 b. relative minimum of 0 at $x = 1$
 c. relative maximum of -4 at $x = -1$
 d. relative minimum of -2 at $x = 0$

12. Find the y -intercept of $h(x) = \frac{5x^3 - 6}{2}$.

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13. Evaluate $g(4)$ for $g(x) = \begin{cases} 2x-1 & \text{if } x < 0 \\ x^2 & \text{if } 0 \leq x \leq 5 \\ \sqrt{x} & \text{if } x > 5 \end{cases}$.

- a. 2 b. 5
 c. 7 d. 16

14. Which function is an even function?

- a. $f(x) = x^3 - 3x$
 b. $f(x) = \sqrt{x-2}$
 c. $f(x) = \frac{3}{x}$
 d. $f(x) = x^4 - 3x^2$

15. Which graph represents a function that has an inverse that is also a function?

