Name: _____   **Date:** _____

tqvwo1pw

Show ALL work (where applicable) for full credit.

1. Which of the following is always true for all functions?

    I.   Zero cannot be in the domain.

    II. For every x there is only one y.

    III. For every y there is only one x.

    A. I only   B. II only

    C. III only   D. I and III only

2. This equation represents what type of function?

    $y = 3x^2 - 5$

    A. linear   B. quadratic

    C. absolute value   D. cubic
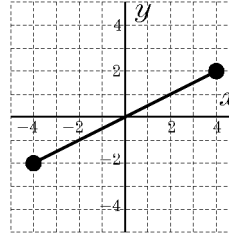
3. What is the domain of the given relation?

    $\{(2,2),\ (3,2),\ (2,3),\ (1,4)\}$

    A. $\{2,3,4\}$ B. $\{1,2,3\}$

    C. $\{1,4\}$ D. $\{2,3\}$

4. State the domain and range of the function $y = -3x - 2$. **Note:** $x \in \mathbb{R}$ means $x \in (-\infty, \infty)$
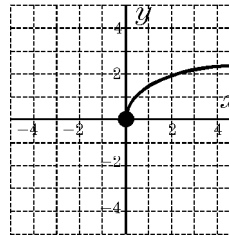
    A. $x \in \mathbb{R}$ and $y \in \mathbb{R}$ B. $x \in \mathbb{R}$ and $y > 0$

    C. $x \neq 0$ and $y \neq 0$ D. $x \in \mathbb{R}$ and $y > -2$

5. State the domain of the function.

    A. $x \geq -4$

    B. $-2 \leq x \leq 2$

    C. $-4 \leq x \leq 4$

    D. $\{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

6.

    What is the domain of the function shown?

    A. $x \geq 0$ B. $y \geq 0$

    C. $y \leq 0$ D. all real numbers

7. What is the range of the function

    $f(x) = 2x + 3$

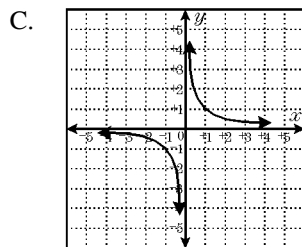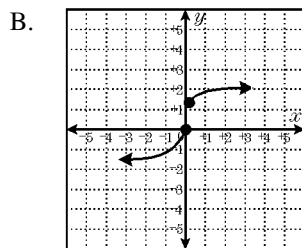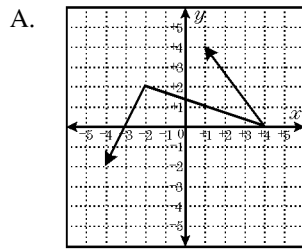   when the domain is $\{-3, -1, 1\}$?

    A. $\{0, 2, 4\}$ B. $\{9, 5, 3\}$

    C. $\{3, -1, -5\}$ D. $\{-3, 1, 5\}$

8. This equation represents what type of function?

$$y = |x - 4| + 2$$

A. quadratic B. exponential

C. absolute value D. cubic

9. Which of the following graphs is a function?

A.

B.

C.
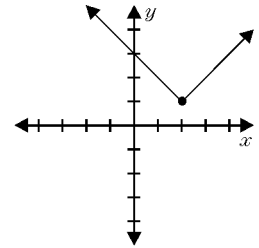

D. none of these
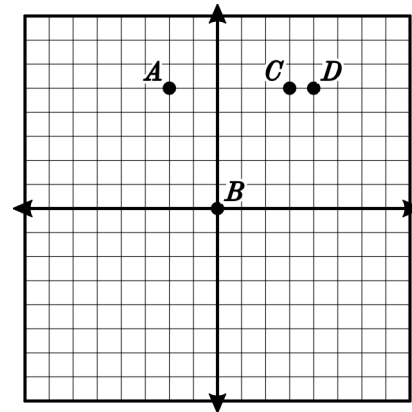
10. Which of the following is a quadratic function?

A. $f(x) = 3x^4 - 2x^2 + 7$

B. $f(x) = 3x - 5$

C. $f(x) = 2x^2 - 3x + 6$

D. $f(x) = 3$

11. Given the graph, describe the domain.

A. $x \geq 1$

B. $y \geq 1$

C. $x < 2$

D. All Real Numbers

12. What is a reasonable domain for the relation graphed below?

A. $[-2, 4]$ B. $[-1, 5]$

C. $\{-2, 0, 3, 4\}$ D. $\{-1, 0, 5\}$

13. Find $f(x) - g(x)$, given $f(x) = 2x^2 - 3x + 1$ and $g(x) = x^2 + 10x + 5$.

A. $x^2 - 13x - 4$ B. $7x^2 + 24x + 17$

C. $x^2 + 30x - 13$ D. $x^2 - 36x - 17$

14. Let $f(x) = \sqrt{x}$, $g(x) = 2\sqrt{x-4} + 6$. Describe $g(x)$ in terms of the parent function, $f(x)$.

$g(x)$ is $f(x)$:

A. vertical shrink, translated left 4 and up 6

B. vertical stretch, translated right 4 and up 6

C. horizontal stretch, translated right 6 and down 4

D. horizontal shrink, translated right 4 and up 6

15. Compared to its "parent" function $f(x) = x^2$, what effect will we see in the graph of $f(x) + 7$?

    A.   translated 7 units left

    B.   translated 7 units right

    C.   translated 7 units up

    D.   translated 7 units down
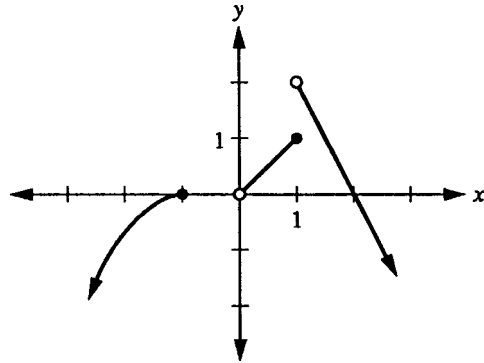
16. What is the range of the graphed function?

    A. $-1, -2, -3$

    B. $-4, -1, 2, 5$

    C. $-3 \le y \le -1$

    D. $-4 \le x < 5$
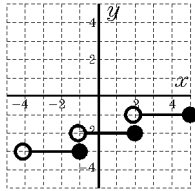
17. Consider the equation $y = |x|$. What effect will replacing x with $x + 7$ have on the graph?

    A.   slides the graph 7 units left

    B.   slides the graph 7 units up

    C.   slides the graph 7 units down

    D.   shrinks the graph by a factor of 7

18.

Given the graph, find the domain, range, and interval of increasing, decreasing and constant

19. If the graph of $y = x^2$ is translated 3 units to the left and 4 units up, what is its equation? Graph the parent function and its translation.

20. If the graph of $y = \sqrt{x}$ is translated 2 units to the left, 5 units down, and then flipped over the x-axis, what would be the resulting equation? Graph the parent function and its translation.

21. The graph of $y = |x|$ is translated 3 units to the left and 4 units down. What is the resulting equation? Graph the parent function and its translation.

22. Graph $f(x) = \begin{cases} -3 & \text{if } x < 0 \\ -1 & \text{if } x = 0 \\ x & \text{if } x > 0 \end{cases}$