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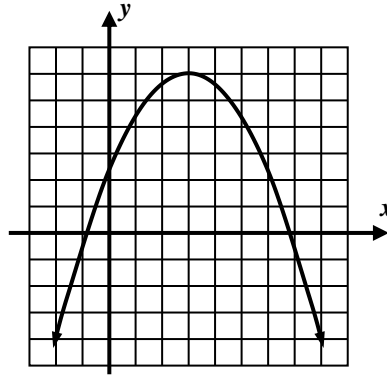
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QUADRATIC FUNCTIONS AND THEIR ALGEBRA REVIEW QUESTIONS

Part I Questions

1. For the quadratic function shown below, the coordinates of its vertex are

- (1) (0, 2)
- (2) (-1, 7)
- (3) (6, 2)
- (4) (3, 6)



2. A quadratic function has selected values shown in the table below. If its domain is all real numbers, which of the following represents the range of this quadratic function?

- (1) [1, 6]
- (2) [6, 15]
- (3) [6, ∞)
- (4) (-∞, 6]

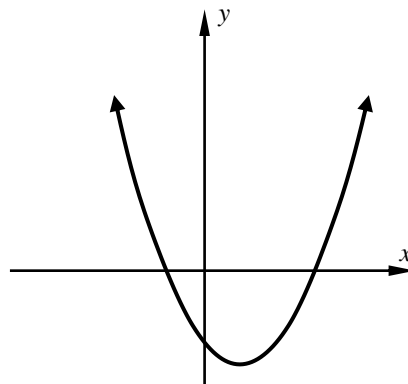
x	1	2	3	4	5	6
y	10	7	6	7	10	15

3. Which of the following quadratic function has a maximum value of 16?

- (1) $y = x^2 + 16$
- (2) $y = 16 - x^2$
- (3) $y = (x - 16)^2$
- (4) $y = (x + 16)^2$

4. Which of the following could be the equation of the quadratic shown below? Explain your reasoning.

- (1) $y = -3x^2 + 8x - 5$
- (2) $y = 4x^2 - 6x + 7$
- (3) $y = -2x^2 + 12x + 11$
- (4) $y = x^2 - 8x - 2$



5. The quadratic function $f(x)$ has one zero at $x = -5$ and a turning point at $(3, 10)$. What is the value of its other zero?

(1) $x = 11$

(3) $x = 25$

(2) $x = 5$

(4) $x = -3$

6. Which of the following is the turning point of the function $y = (x - 8)^2 - 2$?

(1) $(8, -2)$

(3) $(-8, -2)$

(2) $(-8, 2)$

(4) $(8, 2)$

7. Which of the following represents the range of the function $g(x) = -3(x + 5)^2 + 10$?

(1) $y > 10$

(3) $y \leq 10$

(2) $y > -15$

(4) $y \leq 15$

8. The quadratic function $y = x^2 - 8x + 7$ can be written equivalently by completing the square as

(1) $y = (x + 4)^2 + 3$

(3) $y = (x - 8)^2 + 7$

(2) $y = (x - 4)^2 - 9$

(4) $y = (x - 2)^2 - 11$

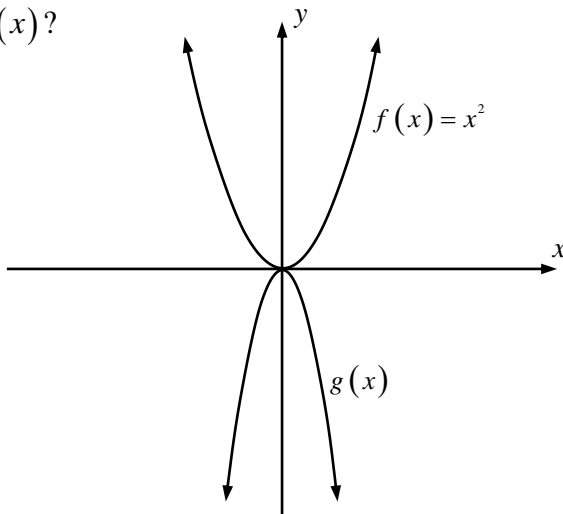
9. If the quadratic function $f(x) = x^2$ is graphed below along with the quadratic function $g(x)$, which of the following could be a correct equation for $g(x)$?

(1) $g(x) = 2x^2$

(2) $g(x) = -2x^2$

(3) $g(x) = \frac{1}{2}x^2$

(4) $g(x) = -\frac{1}{2}x^2$



10. The solutions to the equation $5(x-1)(x+3)=0$ are

- (1) $x = -3$ and $x = 1$ (3) $x = -5$ and $x = 15$
(2) $x = -1$ and $x = 3$ (4) $x = -1, 3,$ and 5

11. Which of the following is the solution set to the equation $x^2 - 6x - 16 = 0$?

- (1) $\{6, 16\}$ (3) $\{-8, 2\}$
(2) $\{-6, 16\}$ (4) $\{-2, 8\}$

12. The solution set to $8x^2 - 4x = 0$ is

- (1) $x = 0$ and 4 (3) $x = 0$ and $\frac{1}{2}$
(2) $x = \frac{1}{2}$ and 4 (4) $x = -4$ and 2

13. Which of the following represent the zeroes of the function $y = x^2 + 3x - 10$?

- (1) $x = -3$ and 10 (3) $x = -10$ and 0
(2) $x = -5$ and 2 (4) $x = -3$ and 5

14. Which of the following is the turning point of the function $y = (x+3)(x-5)$?

- (1) $(1, -16)$ (3) $(-2, -7)$
(2) $(3, 12)$ (4) $(-4, -8)$

15. The product of two consecutive integers is 24 more than six times the smaller integer. Which of the following equations could be solved to find the smaller integer, n ?

(1) $n^2 + n - 24 = 0$ (3) $n^2 - 5n - 24 = 0$

(2) $n^2 + 7n + 24 = 0$ (4) $n^2 + 6n + 24 = 0$

16. Which of the following quadratic has the same zeroes as $y = x^2 - 7x - 30$?

(1) $y = x^2 - 7x - 10$ (3) $y = 2x^2 - 14x - 30$

(2) $y = 5x^2 - 35x - 150$ (4) $y = x^2 + 7x + 30$

17. Which of the following represents the turning point of the quadratic function $y = x^2 + 10x + 35$?

(1) $(-3, 20)$ (3) $(-5, 10)$

(2) $(5, 110)$ (4) $(3, 74)$

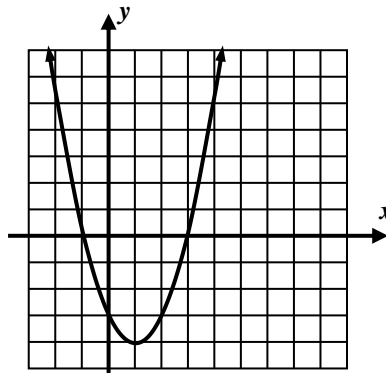
18. Which of the following represents a correct equation for the parabola shown below?

(1) $y = (x + 3)(x - 1)$

(2) $y = (x + 2)(x - 2)$

(3) $y = (x - 5)(x + 1)$

(4) $y = (x + 1)(x - 3)$



Free Response Questions

19. A quadratic function has a turning point at $(3, 8)$. Selected values for the function are shown in the table below.

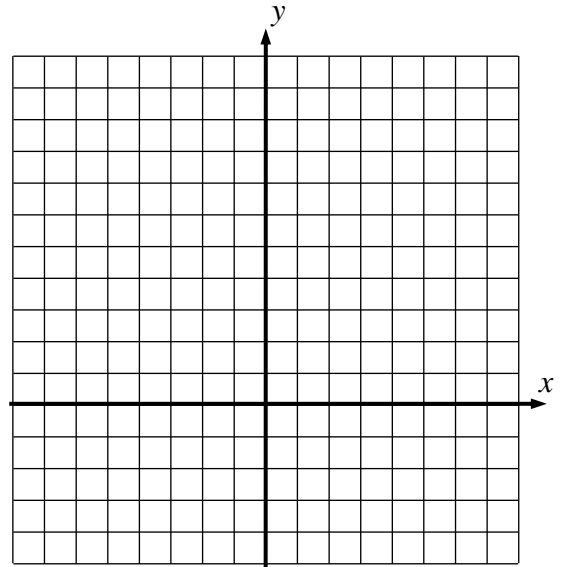
x	-1	0	1	2	3	4	5	6	7
$f(x)$		-10	0		8	6			-24

(a) Finish filling out the table.

(b) State the zeroes of the function.

20. For the quadratic function $f(x) = x^2 + 4x - 1$ defined on the interval $-6 \leq x \leq 2$.

(a) Graph the function for the stated **domain** interval.



(b) State the interval over which $f(x)$ is increasing.

21. Place the quadratic $x^2 - 16x + 44$ into vertex form by using the method of completing the square and then state the coordinates of its vertex.

22. Solve the following equation for all values of x . You may use the calculator to help you. Remember, first **set the equation equal to 0**.

$$x^2 + 18x - 17 = 11x - 27$$

23. A rectangle has a length that is nine feet less than four times its width. Its area is 90 square feet. Algebraically determine the length of its width and length. Show the work that leads to your answer.