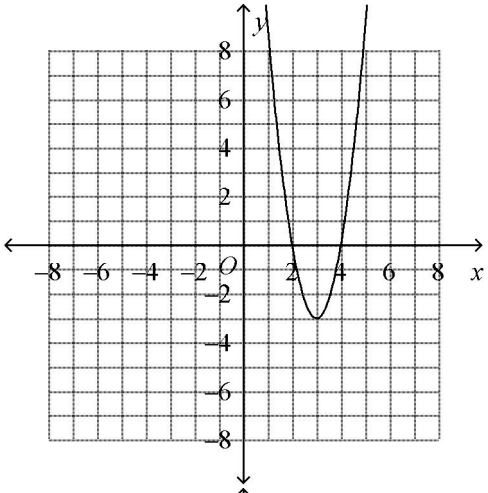
Name: _____ Class: _____ Date: _____ ID: R

ALGEBRA 2 - 5.1 to 5.3 Quadratic Equations & Quadratic Functions REVIEW

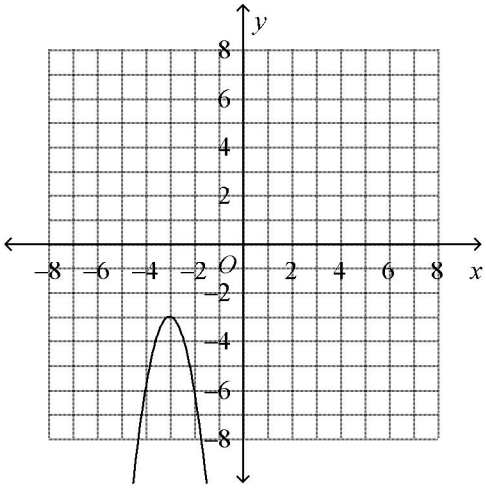
Multiple Choice Identify the choice that best completes the statement or answers the question.

____ 1) Which is the graph of $y = -3(x - 3)^2 - 3$?

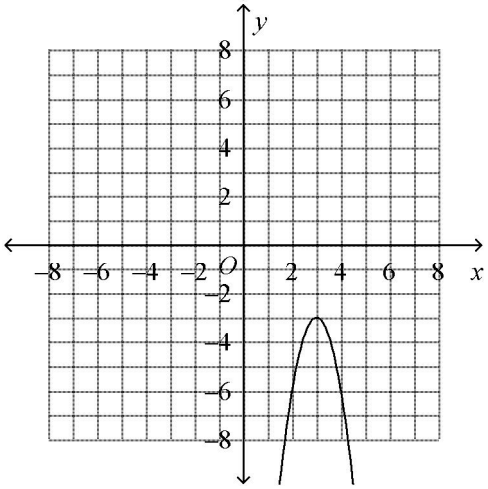
a)



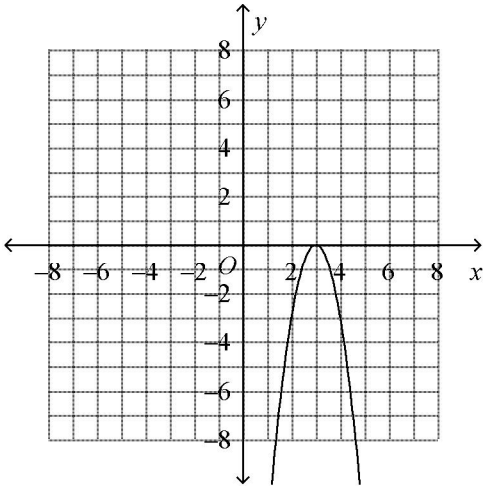
c)



b)



d)



____ 2) Identify the vertex and the y-intercept of the graph of the function $y = 3(x + 2)^2 - 5$.

a) vertex: (–2, –5); y-intercept: 7

b) vertex: (2, 5); y-intercept: 12

c) vertex: (2, –5); y-intercept: 7

d) vertex: (–2, 5); y-intercept: –1

____ 3) Find the zeros of the function $h(x) = x^2 - 15x + 50$ by factoring.

a) $x = 2$ or $x = 25$

b) $x = 10$ or $x = 5$

c) $x = -10$ or $x = -5$

d) $x = -2$ or $x = -25$

____ 4) Find the roots of the equation $24x - 36 = 4x^2$ by factoring.

a) $x = 3$ b) $x = -9$ c) $x = 9$ d) $x = -3$

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Write the equation of the parabola in vertex form.

____ 5) vertex (–2, 4), point (2, 84)

a) $y = 5(x - 2)^2 + 4$
b) $y = 84(x + 2)^2 - 4$
c) $y = 5(x + 2)^2 + 4$
d) $y = 2(x - 2)^2 + 4$

____ 6) vertex (0, 3), point (–1, 5)

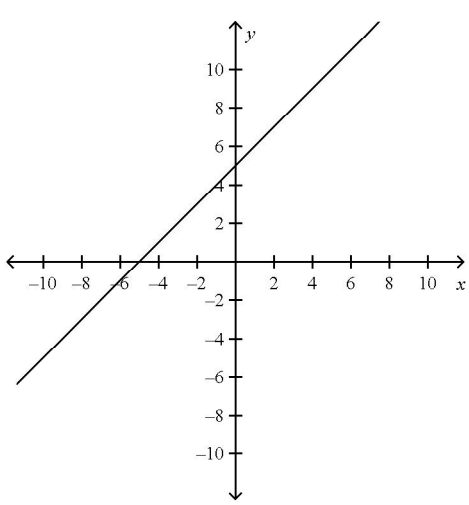
a) $y = 5x^2 - 3$
b) $y = 2x^2 - 3$
c) $y = -x^2 + 3$
d) $y = 2x^2 + 3$

____ 7) Find the minimum or maximum value of $f(x) = x^2 + x + 10$. Then state the domain and range of the function.

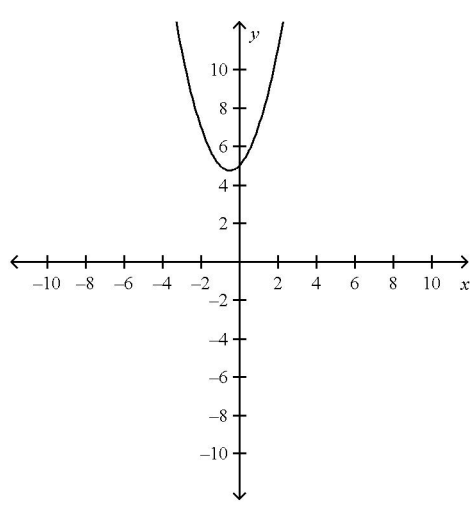
a) The minimum value is 9.75. D: {all real numbers}; R: $\{y \mid y \geq 9.75\}$
b) The minimum value is 9.75. D: $\{x \mid x \geq 9.75\}$; R: {all real numbers}
c) The maximum value is –0.5. D: {all real numbers}; R: $\{y \mid y \geq 9.75\}$
d) The maximum value is –0.5. D: $\{x \mid x \geq 9.75\}$; R: {all real numbers}

____ 8) Graph $f(x) = x^2 + x + 5$ by using a table.

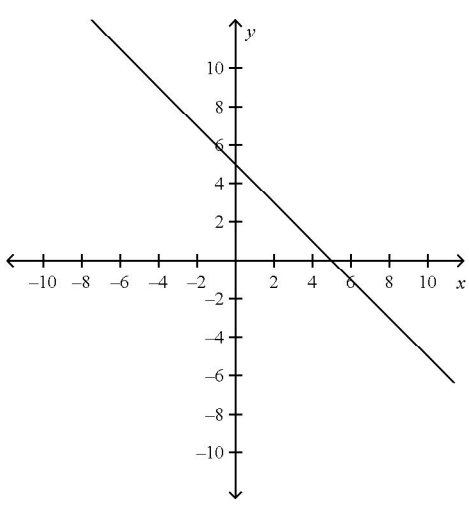
a)



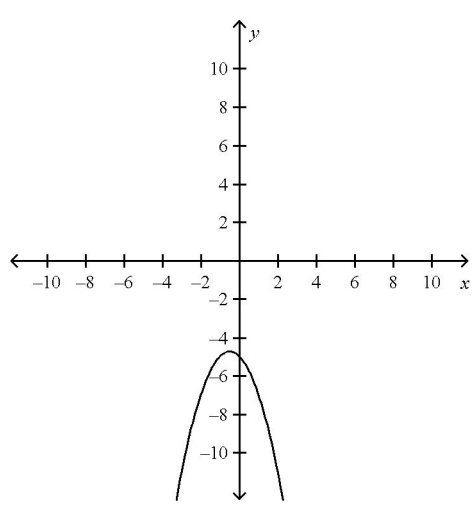
c)



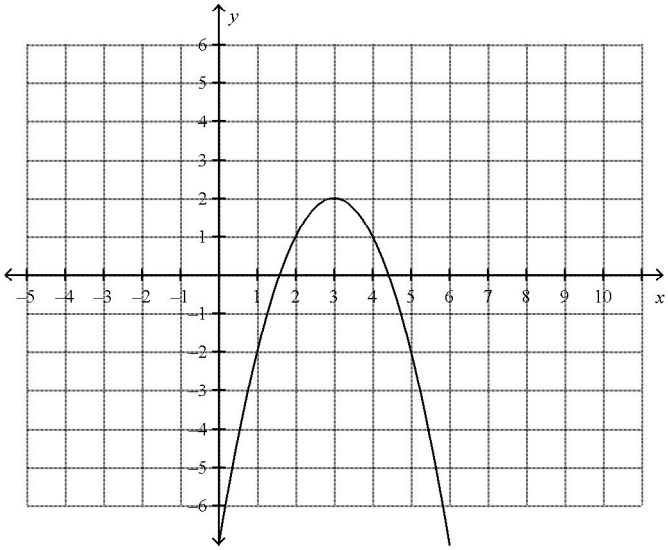
b)



d)

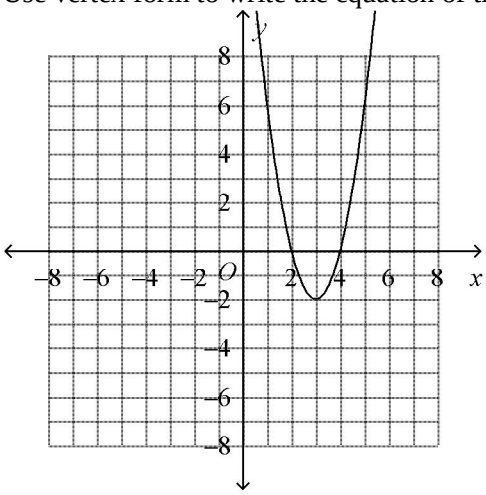


____ 9) Which quadratic function does the graph represent?



a) $f(x) = -x^2 + 6x + 7$
b) $f(x) = x^2 + 6x - 7$
c) $f(x) = -x^2 + 6x - 7$
d) $f(x) = -x^2 - 6x - 7$

____ 10) Use vertex form to write the equation of the parabola.



a) $y = 2(x - 3)^2 - 2$
b) $y = 2(x + 3)^2 - 2$
c) $y = 2(x + 3)^2 + 2$
d) $y = (x - 3)^2 - 2$

____ 11) The parent function $f(x) = x^2$ is reflected across the x-axis, vertically stretched by a factor of 3, and translated right 7 units to create g. Use the description to write the quadratic function in vertex form.

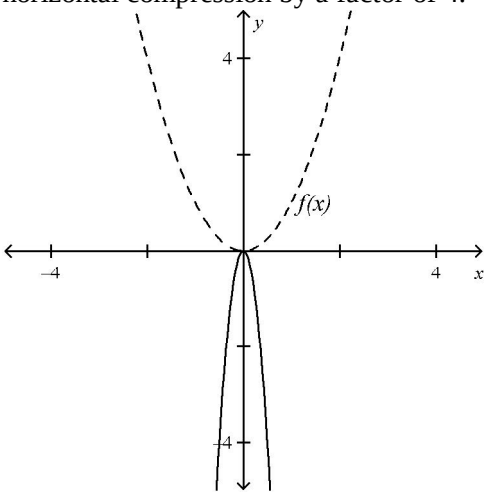
a) $g(x) = 7(x + 3)^2$
b) $g(x) = -3(x - 7)^2$
c) $g(x) = -3(x + 7)^2$
d) $g(x) = 3(x - 7)^2$

____ 12) Find the zeros of $f(x) = x^2 - 2x - 3$ by using a graph and table.

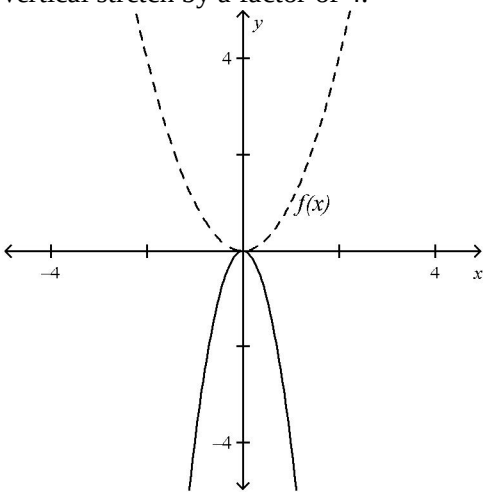
a) –1 and 3
b) –3
c) 1 and –3
d) 1 and –4

____ 13) Using the graph of $f(x) = x^2$ as a guide, describe the transformations, and then graph the function $g(x) = -4x^2$.

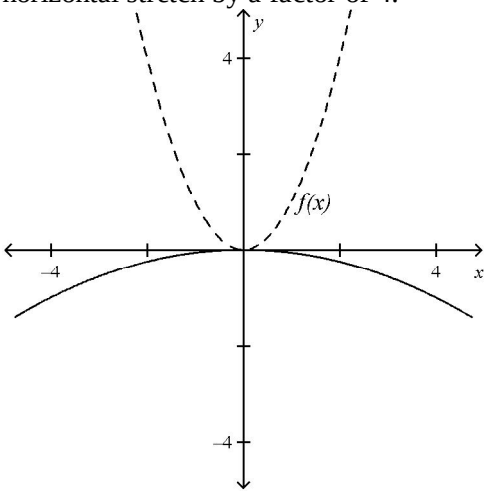
a) A reflection across the x-axis and a horizontal compression by a factor of 4.



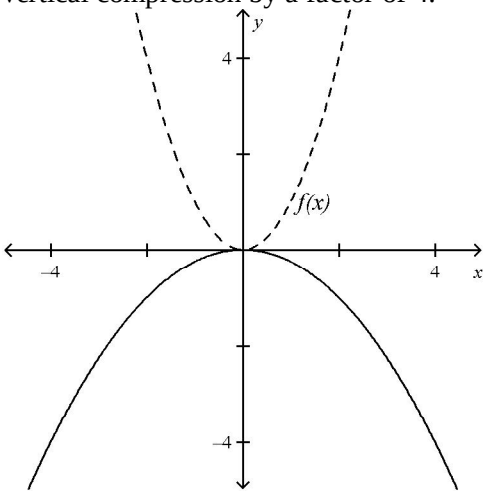
c) A reflection across the x-axis and a vertical stretch by a factor of 4.



b) A reflection across the x-axis and a horizontal stretch by a factor of 4.



d) A reflection across the x-axis and a vertical compression by a factor of 4.



____ 14) Solve by factoring. $5x^2 + 39x - 54 = 0$

a) $9, -\frac{5}{9}$ b) $-9, \frac{6}{5}$ c) $-9, 5$ d) $\frac{6}{5}, -\frac{5}{9}$

____ 15) Write a quadratic function in standard form with zeros 9 and –7.

a) $f(x) = x^2 + 2x - 63$

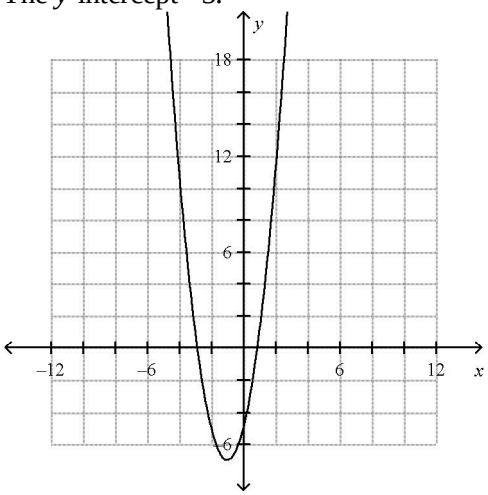
b) $f(x) = x^2 + 4x + 4$

c) $0 = x^2 - 2x - 63$

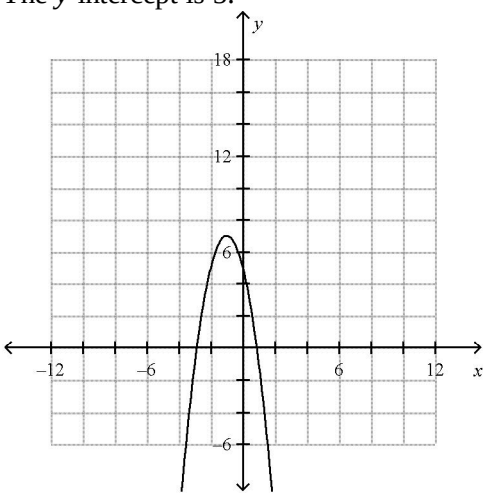
d) $f(x) = x^2 - 2x - 63$

____ 16) Consider the function $f(x) = -4x^2 - 8x + 10$. Determine whether the graph opens up or down. Find the axis of symmetry, the vertex and the y-intercept. Graph the function.

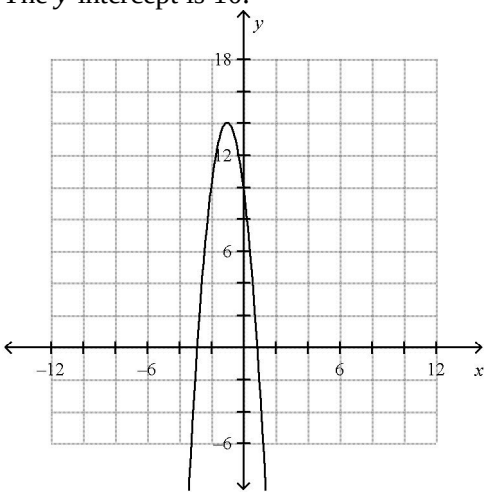
a) The parabola opens upward.
The axis of symmetry is the line $x = -1$.
The vertex is the point $(-1, -6)$.
The y-intercept -5.



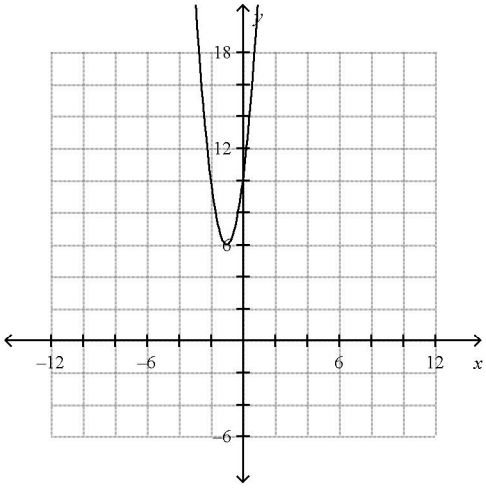
c) The parabola opens downward.
The axis of symmetry is the line $x = -1$.
The vertex is the point $(-1, 7)$.
The y-intercept is 5.



b) The parabola opens downward.
The axis of symmetry is the line $x = -1$.
The vertex is the point $(-1, 14)$.
The y-intercept is 10.

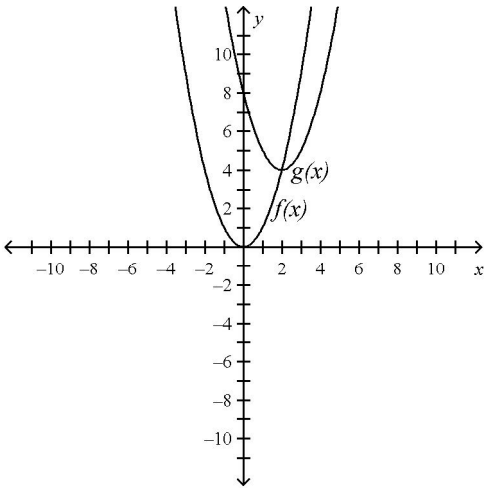


d) The parabola opens upward.
The axis of symmetry is the line $x = -1$.
The vertex is the point $(-1, 14)$.
The y-intercept 10.

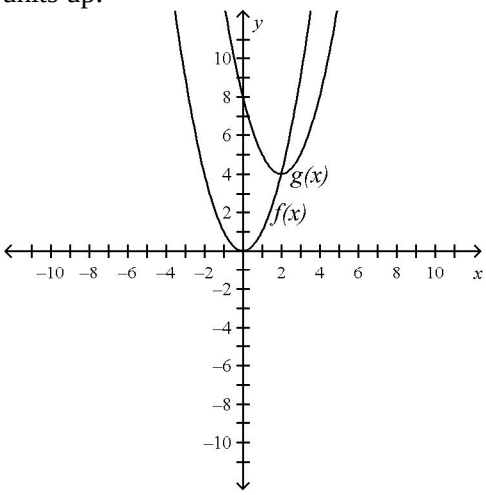


____ 17) Using the graph of $f(x) = x^2$ as a guide, describe the transformations, and then graph the function $g(x) = (x-2)^2 + 4$.

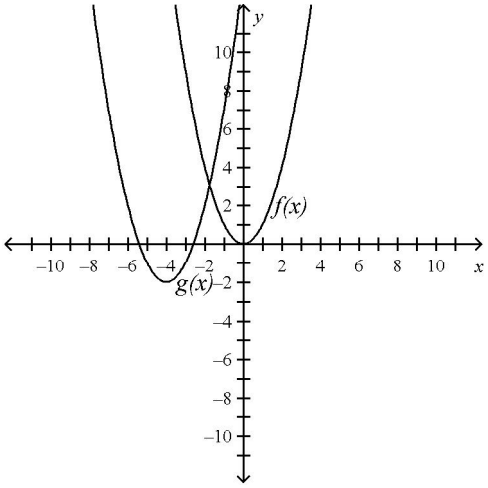
a) $g(x)$ is $f(x)$ translated 2 units left and 4 units down.



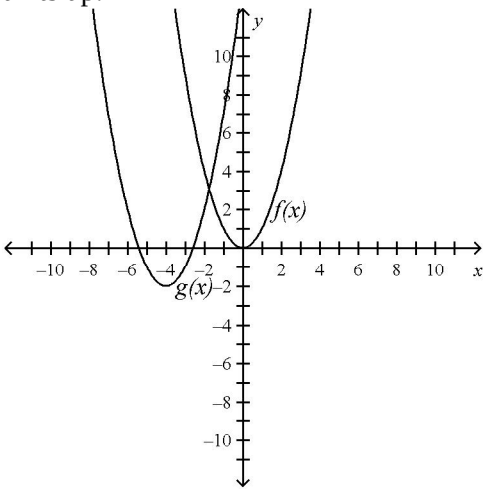
c) $g(x)$ is $f(x)$ translated 2 units right and 4 units up.



b) $g(x)$ is $f(x)$ translated 4 units left and 2 units down.



d) $g(x)$ is $f(x)$ translated 4 units right and 2 units up.



Numeric Response

18) Identify the axis of symmetry for the graph of $f(x) = 2x^2 + 4x + 2$.

ALGEBRA 2 - 5.1 to 5.3 Quadratic Equations & Quadratic Functions REVIEW
Answer Section

MULTIPLE CHOICE

1) ANS: B OBJ: 5-3.1 Using Vertex Form
STA: TX TEKS 2A.4A | TX TEKS 2A.4B | TX TEKS 2A.6C | TX TEKS 2A.7A | TX TEKS 2A.7B | TX TEKS 2A.8A
2) ANS: A OBJ: 5-3.1 Using Vertex Form
STA: TX TEKS 2A.4A | TX TEKS 2A.4B | TX TEKS 2A.6C | TX TEKS 2A.7A | TX TEKS 2A.7B | TX TEKS 2A.8A
3) ANS: B OBJ: 5-3.2 Finding Zeros by Factoring
STA: 2A.8.D
4) ANS: A OBJ: 5-3.4 Finding Roots by Using Special Factors
STA: 2A.8.D
5) ANS: C OBJ: 5-3.1 Using Vertex Form
STA: TX TEKS 2A.4A | TX TEKS 2A.4B | TX TEKS 2A.6C | TX TEKS 2A.7A | TX TEKS 2A.7B | TX TEKS 2A.8A
6) ANS: D OBJ: 5-3.1 Using Vertex Form
STA: TX TEKS 2A.4A | TX TEKS 2A.4B | TX TEKS 2A.6C | TX TEKS 2A.7A | TX TEKS 2A.7B | TX TEKS 2A.8A
7) ANS: A OBJ: 5-2.3 Finding Minimum or Maximum Values
STA: 2A.6.A
8) ANS: C OBJ: 5-1.1 Graphing Quadratic Functions Using a Table
STA: 2A.6.B
9) ANS: C STA: 2A.6.B
10) ANS: A OBJ: 5-3.1 Using Vertex Form
STA: TX TEKS 2A.4A | TX TEKS 2A.4B | TX TEKS 2A.6C | TX TEKS 2A.7A | TX TEKS 2A.7B | TX TEKS 2A.8A
11) ANS: B OBJ: 5-1.4 Writing Transformed Quadratic Functions
STA: 2A.7.B
12) ANS: A OBJ: 5-3.1 Finding Zeros by Using a Graph or Table
STA: 2A.8.D
13) ANS: C OBJ: 5-1.3 Reflecting , Stretching , and Compressing Quadratic Functions
STA: 2A.7.B
14) ANS: B OBJ: 5-5.1 Solving by Factoring and Finding Square Roots
STA: TX TEKS 2A.8A | TX TEKS 2A.8C | TX TEKS 2A.8D
15) ANS: D OBJ: 5-3.5 Using Zeros to Write Function Rules
STA: 2A.6.C
16) ANS: B OBJ: 5-2.2 Graphing Quadratic Functions in Standard Form
STA: 2A.6B

17) ANS: C OBJ: 5-1.2 Translating Quadratic Functions
STA: 2A.7.B

SHORT ANSWER

18) ANS:
$x = -1$

OBJ: 5-2.1 Identifying the Axis of Symmetry STA: 2A.7.A