Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form A

Select the best answer.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = 7(x + 3)^2 - 1$.

A compress by a factor of $\frac{1}{7}$, 3 units left, 1 unit down

B stretch by a factor of $\frac{1}{7}$, 3 units right, 1 unit down

C stretch by a factor of 7, 3 units left, 1 unit down

D stretch by a factor of 7, 3 units right, 1 unit down

2. If the parent function $f(x) = x^2$ is vertically stretched by a factor of 3, translated 2 units to the right, then translated 5 units up, write the resulting function $g(x)$ in vertex form.

A $g(x) = 3(x - 2)^2 + 5$

B $g(x) = 3(x + 2)^2 + 5$

3. Consider $h(x) = 2x^2 - 8x - 10$. Identify its vertex and y-intercept.

A $\left(-\frac{5}{2}, 0\right)$; $(2, -18)$

B $(2, -18)$; $(0, -10)$

C $(2, -18)$; $(0, -5)$

D $(2, 0)$; $(0, -10)$

4. Find the minimum or maximum of $g(x) = -x^2 - 2x + 8$.

A maximum of $(0, 8)$

B minimum of $(-1, 9)$

5. Find all zeros of the trinomial $k(x) = x^2 - 2x - 24$.

A $(-6, 0)$, $(4, 0)$

B $(-4, 0)$, $(6, 0)$

C $(0, -4)$, $(0, 6)$

D $(1, -25)$, $(0, -24)$

6. Solve $81x^2 = 1$.

A $x = \pm\frac{1}{9}$

B $x = \pm 9$

7. Write a quadratic function in standard form having zeros of -5 and 1.

A $h(x) = x^2 - 4x - 5$

B $h(x) = x^2 - 4x - 4$

C $h(x) = x^2 + 4x - 5$

D $h(x) = x^2 + 4x - 4$

8. Identify the vertex of $g(x) = (x + 10)^2 + 2$.

A $(-10, -2)$

B $(-10, 2)$

9. Complete the square to write $c(x) = x^2 + 6x + 14$ in vertex form.

A $c(x) = (x + 3)^2 + 5$

B $c(x) = (x + 3)^2 + 14$

C $c(x) = (x + 3)^2 + 23$

D $c(x) = (x + 6)^2 + 14$

10. Simplify $i\sqrt{-45}$.

A $-3\sqrt{5}$

B $-3i\sqrt{5}$

11. Solve $36x^2 + 25 = 0$.

A $-6 \pm 5i$

B $\pm\frac{5}{6}i$

C $\pm\frac{6}{5}i$

D $5 \pm 6i$

12. Use the Quadratic Formula to solve $x^2 + 4x + 6 = 0$.

A $-4 \pm 2i\sqrt{2}$

B $-2 \pm i\sqrt{2}$

13. For the discriminant $\sqrt{(7)^2 - 4 \cdot 5 \cdot 3}$, identify the number of solutions and their type(s).

A 2 complex solutions

B 1 real and 1 complex solution

C 2 real solutions

D 1 complex solution

14. Solve $h(x) = x^2 - 2x - 8 > 7$.

A $-3 < x < 5$

B $x < -3$ or $x > 5$

15. Solve $3x^2 + 4x - 7 < 13$.

A $-\frac{10}{3} < x < 2$

B $-1 < x < \frac{7}{3}$

C $x < -\frac{10}{3}$ or $x > 2$

D $x < -1$ or $x > \frac{7}{3}$

16. Write a quadratic equation that fits the points $(0, -5)$, $(1, 3)$, and $(5, -5)$.

A $f(x) = -2x^2 + 10x - 5$

B $f(x) = -1.5x^2 + 9.5x - 5$

C $f(x) = \frac{1}{2}x^2 - -\frac{5}{2}x - 5$

D $f(x) = 8x - 5$

17. Selena is standing on a rock cliff that is 52 feet high. She tosses a pebble upward over the edge, where it hits the top of a 12-foot-high boulder. The quadratic equation that models the path of the pebble is $p(t) = -16t^2 + 12t + 52$. How long did it take for the pebble to hit the top of the boulder?

A 1.25 seconds

B 1.50 seconds

C 2.00 seconds

D 3.25 seconds

18. Simplify $\frac{12 + 8i}{2i}$.

A $4 - 6i$

B $6 - 4i$

19. Simplify $(9 - 2i)(3 + i)$.

A $12 + 4i$

B $25 + 3i$

C $27 + i$

D $29 + 3i$

20. Simplify $|-11 + i|$.

A $11 + i$

B $\sqrt{122}$

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form B

Select the best answer.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = \frac{1}{2}(x - 9)^2 + 4$.

A vertical compression by $\frac{1}{2}$, 9 units left, 4 up

B vertical compression by $\frac{1}{2}$, 9 units right, 4 up

C vertical stretch by 2, 9 units left, 4 up

D vertical stretch by 2, 9 units right, 4 up

2. If the parent function $f(x) = x^2$ is horizontally compressed by a factor of 3, translated 8 units to the right, then translated 1 unit down, write the resulting function $g(x)$ in vertex form.

F $g(x) = \frac{1}{3}(x - 8)^2 - 1$

G $g(x) = \frac{1}{3}(x + 8)^2 - 1$

H $g(x) = 3(x - 8)^2 - 1$

J $g(x) = 3(x + 8)^2 - 1$

3. Consider $h(x) = 2x^2 - 6x - 36$. Identify its vertex and y-intercept.

A $(1.5, -40.5)$; $(0, -36)$

B $(1.5, -40.5)$; $(0, -18)$

C $(2, -40)$; $(0, -36)$

D $(8, -2)$; $(0, -16)$

4. Find the minimum or maximum of $g(x) = x^2 - 2x - 48$.

F maximum of -49

G maximum of 0

H minimum of -49

J minimum of -48

5. Find all zeros of the trinomial $k(x) = x^2 + 10x - 200$.

A $(-10, 0)$, $(20, 0)$

B $(-5, -255)$, $(0, -225)$

C $(0, 10)$, $(0, -20)$

D $(10, 0)$, $(-20, 0)$

6. Solve $225x^2 = 9$.

F $x = \pm 2$

G $x = \pm\frac{1}{5}$

H $x = 3, -15$

J $x = \pm 5$

7. Write a quadratic function in standard form having zeros of 2 and -11.

A $f(x) = x^2 - 9x - 22$

B $f(x) = x^2 - 9x + 22$

C $f(x) = x^2 + 9x - 22$

D $f(x) = x^2 + 9x + 22$

8. Identify the vertex of $g(x) = (x + 14)^2 - 8$.

F $(-14, -8)$

G $(-14, 8)$

H $(14, -8)$

J $(14, 8)$

9. Complete the square to write $c(x) = x^2 - 8x - 17$ in vertex form.

A $c(x) = (x - 4)^2 - 1$

B $c(x) = (x - 4)^2 - 33$

C $c(x) = (x - 6)^2 - 5$

D $c(x) = (x - 6)^2 - 19$

10. Simplify $-i^7\sqrt{-72}$.

F $-6i\sqrt{2}$

G $-6\sqrt{2}$

H $6i\sqrt{2}$

J $6\sqrt{2}$

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form B continued

11. Solve $9x^2 + 25 = 0$.

A $-3 \pm 5i$

B $\pm\frac{3}{5}i$

C $\pm\frac{5}{3}i$

D $5 \pm 3i$

12. Use the Quadratic Formula to solve $3x^2 + 6x + 4 = 0$.

F $-3 \pm \sqrt{3}i$

G $-1 \pm \frac{\sqrt{3}}{3}$

H $-1 \pm \frac{\sqrt{3}}{3}i$

J $-1 \pm \frac{\sqrt{2}}{2}i$

13. For the discriminant $\sqrt{(-4)^2 - 4 \cdot 2 \cdot 1}$, identify the number of solutions and their type(s).

A 1 real solution

B 1 real and 1 complex solution

C 2 complex solutions

D 2 real solutions

14. Solve $3x^2 - 3x - 6 < 12$.

F $-2 < x < 3$

G $-1 < x < 2$

H $x < -2$ or $x > 3$

J $x < -1$ or $x > 2$

15. Solve $-2x^2 + 7x + 30 < 15$.

A $-\frac{5}{2} < x < 6$

B $-\frac{3}{2} < x < 5$

C $x < -\frac{5}{2}$ or $x > 6$

D $x < -\frac{3}{2}$ or $x > 5$

16. Write a quadratic equation that fits the points $(-4, 126)$, $(2, -12)$, and $(5, 54)$.

F $-21x^2 - 117x - 6$

G $5x^2 - 13x - 6$

H $5x^2 + 13x + 6$

J $45x^2 + 213x - 6$

17. Selena is standing on a rock cliff that is 50 feet high. She tosses a pebble upward over the edge, where it hits the roof of a 14-foot-high cabin. The quadratic equation that models the path of the pebble is $p(t) = -16t^2 + 20t + 50$. How long did it take for the pebble to bounce off of the cabin roof?

A 2.5 seconds

B 1.25 seconds

C 2.25 seconds

D 4.5 seconds

18. Simplify $\frac{7 + 11i}{i}$.

F $-7i - 11$

G $-7i + 11$

H $7i - 11$

J $7i + 11$

19. Simplify $\left(\frac{2}{3} + 4i\right)(3 - i)$.

A $-2 + 6\frac{1}{3}i$

B $-2 + 11\frac{1}{3}i$

C $3\frac{2}{3} + 6\frac{1}{3}i$

D $6 + 11\frac{1}{3}i$

20. Simplify $\left|-3 - i^3\right|$.

F $3 + i$

G $3 + i^3$

H $\sqrt{10}$

J $2\sqrt{2}$

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form C

Select the best answer.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = \frac{1}{5}(x + 12)^2 + 1$.

A horizontal compression by a factor of $\frac{1}{5}$, 12 units right, 1 unit up

B horizontal stretch by a factor of 5, 12 units left, 1 unit up

C vertical stretch by a factor of $\frac{1}{5}$, 12 units right, 1 unit up

D vertical compression by a factor of 5, 12 units left, 1 unit up

2. If the parent function $f(x) = x^2$ is horizontally stretched by a factor of 2, translated 11 units to the left, then translated 5 units down, write the resulting function $g(x)$ in vertex form.

F $f(x) = \frac{1}{2}(x - 11)^2 - 5$

G $f(x) = \frac{1}{2}(x + 11)^2 - 5$

H $f(x) = 2(x - 11)^2 - 5$

J $f(x) = 2(x + 11)^2 - 5$

3. Consider $h(x) = 5x^2 + 6x - 8$. Identify its vertex and *y*-intercept.

A $\left(-\frac{5}{6}, \frac{17}{36}\right)$; $(0, -8)$

B $(-0.6, -9.8)$; $(0, -8)$

C $(-0.6, -9.8)$; $\left(0, -\frac{8}{5}\right)$

D $(-0.6, -9.8)$; $(0, -8)$

4. Find the minimum or maximum of $g(x) = -8x^2 - 38x - 9$.

F maximum of $\left(-2\frac{3}{8}, 36\frac{1}{8}\right)$

G maximum of $\left(2\frac{3}{8}, -144\frac{3}{8}\right)$

H minimum of $\left(-4\frac{3}{4}, -370\right)$

J minimum of $\left(-2\frac{3}{8}, 36\frac{1}{8}\right)$

5. Find all zeros of the trinomial $k(x) = 6x^2 + x - 40$.

A $x = -\frac{5}{2}$ or $x = \frac{8}{3}$

B $x = -\frac{5}{3}$ or $x = \frac{8}{2}$

C $x = \frac{5}{3}$ or $x = -4$

D $x = \frac{5}{2}$ or $x = -\frac{8}{3}$

6. Solve $8x^2 = 135$.

F $x = \pm\frac{3\sqrt{30}}{4}$

G $x = \pm\frac{3\sqrt{15}}{2\sqrt{2}}$

H $x = \pm 8.4275$

J $x = \pm 16.875$

7. Write a quadratic function in standard form having zeros of $\frac{3}{7}$ and -4.

A $h(x) = \left(x - \frac{3}{7}\right)(x + 4)$

B $h(x) = \left(x + \frac{3}{7}\right)(x - 4)$

C $h(x) = 3x^2 + 5x - 28$

D $h(x) = 7x^2 + 25x - 12$

8. Identify the vertex of $g(x) = 12(x - 1.2)^2 - 3.9$.

F $(-1.2, -3.9)$

G $(-1.2, 3.9)$

H $(1.2, -3.9)$

J $(1.2, 3.9)$

9. Complete the square to write $c(x) = x^2 - x - 5\frac{3}{4}$ in vertex form.

A $c(x) = (x - 1)^2 - 6\frac{3}{4}$

B $c(x) = \left(x - \frac{1}{2}\right)^2 - 6$

C $c(x) = \left(x - \frac{1}{2}\right)^2 - 5\frac{1}{2}$

D $c(x) = \left(x - \frac{1}{2}\right)^2 - 4\frac{3}{4}$

10. Simplify $-i^{19}\sqrt{-396}$.

F -19.9

G $-6i\sqrt{11}$

H $2i\sqrt{27}$

J $6i\sqrt{11}$

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form C continued

11. Solve $11x^2 + 81 = 0$ and rationalize the solution.

A $x = \pm 7\frac{4}{11}i$

B $x = \pm\frac{9}{\sqrt{11}}i$

C $x = \pm\frac{9\sqrt{11}}{11}i$

D $x = \pm\frac{9\sqrt{11}}{11}$

12. Use the Quadratic Formula to solve $4x^2 + 5x + 2 = 0$.

F $-\frac{5}{8} \pm \frac{\sqrt{7}}{8}$

G $-\frac{5}{8} \pm \frac{\sqrt{7}}{8}i$

H $\frac{5}{8} \pm \frac{\sqrt{7}}{8}$

J $\frac{5}{8} \pm \frac{\sqrt{7}}{8}i$

13. For the discriminant $\sqrt{(-7)^2 - 4 \cdot 5 \cdot 6}$, identify the number of solutions and their type(s).

A 2 complex solutions

B 1 real and 1 complex solution

C 2 real solutions

D 1 real solution

14. Solve $h(x) = \frac{1}{2}x^2 - 11x + 9 \geq -47$.

F $-4 \leq x \leq 14$

G $8 \leq x \leq 14$

H $x \leq -4$ or $x \geq 14$

J $x \leq 8$ or $x \geq 14$

15. Solve $\frac{1}{3}x^2 + 11x - 75 < 105$.

A $-45 < x < 12$

B $-5 < x < 12$

C $x < -45$ or $x > 12$

D $x < -5$ or $x > 12$

16. Write a quadratic equation that fits the points $(3, -48)$, $(-6, 42)$, and $(15, 0)$.

F $f(x) = -\frac{26}{9}x^2 + 56x - 190$

G $f(x) = \frac{2}{3}x^2 - 8x - 30$

H $f(x) = x^2 - 18x + 45$

J $f(x) = 2x^2 - 24x - 90$

17. Selena is standing on a rock cliff that is 720 feet high. She kicks a pebble upward over the edge, and it hits the top of a 57-foot-tall boulder. The quadratic equation that models the path of the pebble is $p(t) = -16t^2 - 88t + 720$. How long did it take for the pebble to hit the boulder?

A 4.25 seconds

B 4.50 seconds

C 5.00 seconds

D 5.25 seconds

18. Simplify $\frac{-5 + 2i}{1 + 3i}$.

F $-5 + \frac{2}{3}i$

G $0.1 - 1.7i$

H $0.1 + 1.7i$

J $1 + 17i$

19. Simplify $(i\sqrt{2} - 5)(\sqrt{18} + i)$.

A $-16\sqrt{2} - i$

B $-16\sqrt{2} + i$

C $-5\sqrt{18} - \sqrt{2} - i$

D $-5\sqrt{18} + \sqrt{2} - i$

20. Simplify $|6i^3 - 15|$.

F $3\sqrt{29}$

G $6i + 15$

H 9

J 21

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form A

Solve.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = 4(x - 9)^2 + 15$.

2. Use this description to write a quadratic equation in vertex form: A vertical stretch by a factor of $\frac{1}{4}$, a translation 7 units to the left, and a translation 1 unit down.

3. Consider $h(x) = 3x^2 + 24x + 40$. Identify its vertex and y-intercept.

4. State whether there is a minimum or maximum of $g(x) = \frac{1}{2}x^2 - 6x - 32$ and identify it.

5. Find all zeros of the trinomial $k(x) = 2x^2 - 5x - 25$.

6. Solve $225x^2 = 9$.

7. Write a trinomial $h(x)$ with zeros of $x = -9$ and $x = 1$.

8. Identify the vertex of $g(x) = (x - 11)^2 - 4$.

9. Complete the square to write the quadratic equation $c(x) = x^2 - 8x + 26$ in vertex form.

10. Simplify $i^2\sqrt{-80}$.

11. Solve $49x^2 + 100 = 0$.

12. Use the Quadratic Formula to solve $x^2 + 6x + 58 = 0$.

13. For the discriminant $\sqrt{(-30)^2 - 4 \cdot 9 \cdot 26}$, identify the number of solutions and their type(s).

14. Solve the quadratic inequality $h(x) = x^2 - 12x - 18 \leq 10$.

15. Solve $5x^2 + 2x + 3 \geq 19$.

16. Write a quadratic equation using the points $(-4, 8)$, $(0, -44)$, and $(5, 26)$.

17. Walt threw a basketball from the basketball court toward the hoop. The quadratic equation that models the path of the ball is $p(t) = -16t^2 + 12t + 6$. If the hoop is 8 feet high, how long is the ball in the air before the ball goes through the hoop?

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form A continued

Simplify.

18. $\frac{14 - i^6}{i}$

_____

19. $(7 + i)(2 + 3i)$

_____

20. $|-6 + 8i|$

_____

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form B

Solve.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = \left(\frac{1}{4}x - 3\right)^2 + 10$.

2. Use this description to write a quadratic equation in vertex form: A vertical stretch by a factor of 5, a translation 7 units to the left, and a translation 1 unit up.

_____

3. Consider $h(x) = 3x^2 + 9x - 4$. Identify its vertex and *y*-intercept.

4. State whether there is a minimum or maximum of $g(x) = -2x^2 - 5x + 3$ and identify it.

5. Find all zeros of the trinomial $k(x) = 2x^2 - x - 55$.

_____

6. Solve $64x^2 = 1$.

_____

7. Write a trinomial $h(x)$ with zeros of $x = -4$ and $x = 17$.

_____

8. Identify the vertex of $g(x) = (x - 15)^2 + 9$.

_____

9. Complete the square to write the quadratic equation $c(x) = x^2 + 10x - 4$ in vertex form.

_____

10. Simplify $i^9\sqrt{-108}$.

_____

11. Solve $81x^2 + 8 = 0$.

_____

12. Use the Quadratic Formula to solve $3x^2 + 6x + 4 = 0$.

_____

13. For the discriminant $\sqrt{(-2)^2 - 4 \cdot 1 \cdot 1}$, identify the number of solutions and their type(s).

_____

14. Solve the quadratic inequality $h(x) + 2x^2 + 17x - 4 \geq 5$.

_____

15. Solve $3x^2 + x - 10 < -8$.

_____

16. Write a quadratic equation using the points $(0, -5)$, $(2, 13)$, and $(-3, -62)$.

_____

17. Fay threw a basketball from the basketball court toward the hoop. The quadratic equation that models the path of the ball is $p(t) = -16t^2 + 28t$. If the hoop is 10 feet high, how long is the ball in the air before the ball goes through the hoop?

_____

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form B continued

Simplify.

18. $\frac{2 - i^5}{i^3}$

_____

19. $(5 - 4i)\left(\frac{1}{10} - i\right)$

_____

20. $|7 - i^5|$

_____

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form C

Solve.

1. Using $f(x) = x^2$ as a guide, describe the transformation that yields $f(x) = \left(\frac{1}{8}x\right)^2 - 9$.

2. Use this description to write a quadratic equation in vertex form: A vertical compression by a factor of $\frac{2}{5}$, a translation 8 units to the right, and a translation 3 units up.

3. Consider $h(x) = \frac{5}{2}x^2 + 23x - 20$. Identify its vertex and y-intercept.

4. State whether there is a minimum or maximum of $g(x) = 0.1x^2 + 3x - 5$ and identify it.

5. Find all zeros of the trinomial $k(x) = 12x^2 + 25x - 7$.

6. Solve $261x^2 = 196$.

7. Write a trinomial $h(x)$ with zeros of $x = -\frac{3}{4}$ and $x = \frac{8}{3}$.

8. Identify the vertex of $g(x) = 3\left(x + \frac{1}{10}\right)^2 - \frac{2}{7}$.

9. Complete the square to write the quadratic equation $c(x) = x^2 - \frac{3}{4}x + 1$ in vertex form.

10. Simplify $\frac{i^{51}\sqrt{-198}}{\sqrt{-507}}$.

11. Solve $28x^2 + 7168 = 0$.

12. Use the Quadratic Formula to solve $x^2 + \frac{6}{5}x + 289\frac{9}{25} = 0$.

13. For the discriminant $\sqrt{(-3.4)^2 - 4(1.7)(1.9)}$, identify the number of solutions and their type(s).

14. Solve the quadratic inequality $h(x) = 28x^2 + 19x - 1 \leq \frac{1}{2}$.

15. Solve $6x^2 - x\sqrt{5} + 5 \geq 10$.

16. Write a quadratic equation using the points $(-3\sqrt{5}, 10)$, $(0, 8)$, and $(\sqrt{5}, 3)$.

Name _____ Date _____ Class _____

CHAPTER 5

Chapter Test

Form C continued

17. Jessie tossed a tennis ball from the window of her apartment building into a bucket on the roof of the building next door. The quadratic equation that models the path of the ball is $p(t) = -16t^2 - 5t + 150$. If the height of the bucket is 15 feet, 3 inches, how long was the ball in the air?

_____

Simplify.

18. $\dfrac{-i^{15}}{35 - 3i^{29}}$

_____

19. $(i\sqrt{2} + i)(7 - 4i)$.

_____

20. $|-60 + 11i|$

_____

36. F
37. D
38. F
39. B
40. G
41. D
42. F
43. C

CHAPTER 5

Section Quiz: Section A

1. D
2. G
3. C
4. F
5. B
6. J
7. B
8. F

Section Quiz: Section B

1. C
2. F
3. D
4. G
5. D
6. F
7. C
8. J
9. A
10. H

Chapter Test Form A

1. C
2. A
3. B
4. B
5. B
6. A
7. C
8. B
9. A
10. A
11. B
12. B
13. A
14. B
15. A
16. A
17. C
18. A
19. D
20. B

Chapter Test Form B

1. B
2. H
3. A
4. H
5. D
6. G
7. C
8. F
9. B
10. G
11. C
12. H
13. D

14. F

15. D

16. G

17. C

18. G

19. D

20. H

Chapter Test Form C

1. D

2. G

3. B

4. F

5. D

6. F

7. D

8. H

9. B

10. J

11. C

12. G

13. A

14. J

15. A

16. G

17. A

18. H

19. B

20. F

Chapter Test Form A

1. Vertical stretch by a factor of 4, 9 units to the right, 15 units up

2. $f(x) = \frac{1}{4}(x + 7)^2 - 1$

3. $V(-4, -8)$; $(0, 40)$

4. A minimum at $(6, -50)$

5. $x = 5$ *or* $x = -\frac{5}{2}$

6. $x = \pm\frac{1}{5}$

7. $f(x) = x^2 + 8x - 9$

8. $V(11, -4)$

9. $c(x) = (x - 4)^2 + 10$

10. $-4i\sqrt{5}$

11. $x = \pm\frac{10}{7}i$

12. $-3 \pm 7i$

13. Two imaginary solutions

14. $-2 \leq x \leq 14$

15. $x \leq -2$ *or* $x \geq \frac{8}{5}$

16. $y = 3x^2 - x - 44$

17. $\frac{1}{2}$ second

18. $-15i$

19. $11 + 23i$

20. 10

Chapter Test Form B

1. horizontal stretch by a factor of 4, 3 to the right, shift up by 10

2. $5(x + 7)^2 + 1$

3. vertex: $(-1.5, -10.75)$; *y*-intercept: $(0, -4)$

4. maximum of $(-1.25, 6.125)$

5. $x = \frac{11}{2}$ or $x = -5$

6. $x = \pm\frac{1}{8}$

7. $h(x) = x^2 - 13x - 68$

8. $(15, 9)$

9. $c(x) = (x + 5)^2 - 29$

10. $-6\sqrt{3}$

11. $x = \pm\frac{2\sqrt{2}}{9}i$

12. $x = -1 \pm \frac{\sqrt{3}}{3}i$

13. One real solution

14. $x \leq -9$ or $x \geq \frac{1}{2}$

15. $-1 < x < \frac{2}{3}$

16. $f(x) = -2x^2 + 13x - 5$

17. 1.25 seconds

18. $2i + 1$

19. $-3\frac{1}{2} - \frac{27}{5}i$

20. $5\sqrt{2}$

Chapter Test Form C

1. Horizontal stretch by 8, no horizontal translation, 9 units down

2. $f(x) = \frac{2}{5}(x - 8)^2 + 3$

3. $(-4.6, -72.9)$; $(0, -20)$

4. minimum at $(-15, -27.5)$

5. $x = -\frac{7}{3}$ or $x = \frac{1}{4}$

6. $\frac{14\sqrt{29}}{87}$

7. $f(x) = 12x^2 - 23x - 24$

8. $\left(-\frac{1}{10}, -\frac{2}{7}\right)$

9. $f(x) = \left(x - \frac{3}{8}\right)^2 + \frac{55}{64}$

10. $-\frac{\sqrt{66}}{13}$

11. $x = \frac{4\sqrt{7}}{7}i$

12. $-\frac{3}{5} \pm 17i$

13. Two complex solutions

14. $-\frac{3}{4} \leq x \leq \frac{1}{14}$

15. $x \leq \frac{\sqrt{5}}{3}$ or $x \geq \frac{\sqrt{5}}{2}$

16. $-\frac{13}{60}x^2 - \frac{47\sqrt{5}}{60}x + 8$

17. 2.75 seconds

18. $\frac{3 + 35i}{1234}$

19. $4 + 4\sqrt{2} + 7i + 7i\sqrt{2}$

20. 61

Performance Assessment

1. $D^2 = \frac{13}{9}x^2 + \frac{52}{9}x + \frac{169}{9}$

2. $(-2, 3)$

3. It is the point on the line that is closest to the origin.

4. $-\frac{3}{2}$

5. The point on a line that is closest to the origin lies on a line passing through the origin that is perpendicular to the original line.

Cumulative Test

1. A

2. J

3. D

4. G

5. C

6. G

7. D

8. H

9. B

10. H

11. B

12. F

13. D

14. G

15. B

16. H

17. A

18. G

19. B

20. J

21. C

22. F

23. C

24. J