NAME _____ DATE _____ PERIOD _____

Chapter 9 Test FORM 1

SCORE _____

Write the letter for the correct answer in the blank at the right of each question.

1. Consider the equation $y = x^2 + 3x - 4$. Determine whether the function has a maximum or minimum value. State the maximum or minimum value. What are the domain and range of the function?

A min.; 0
D: {all real numbers}
R: {all real numbers}

C max.; –6.25
D: $\{x \mid x \leq -1.5\}$
R: $\{y \mid y \geq -6.25\}$

B max.; 0
D: {all real numbers}
R: $\{y \mid y \leq 0\}$

D min.; –6.25
D: {all real numbers}
R: $\{y \mid y \geq -6.25\}$

1. _____

2. What is the equation of the axis of symmetry of the graph of $y = x^2 + 6x - 7$?

F $x = 6$ G $x = -3$ H $x = 3$ J $x = -6$

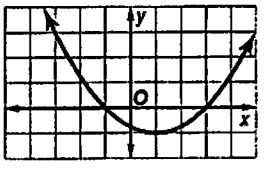
2. _____

3. Find the coordinates of the vertex of the graph of $y = 4 - x^2$. Identify the vertex as a maximum or a minimum point.

A (2, 0); maximum
B (0, 4); minimum
C (0, 4); maximum
D (2, 0); minimum

3. _____

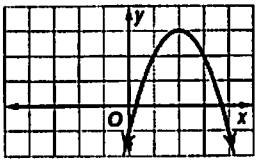
4. Which appear to be the roots of the quadratic equation whose related function is graphed at the right?



F –1, 3 H –3, 1
G –1, 1 J 1, 3

4. _____

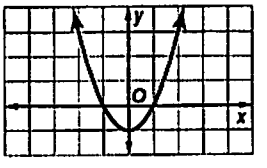
5. One root of the quadratic equation whose related function is graphed lies between which two consecutive integers?



A 1 and 2 C 0 and –1
B 2 and 3 D 0 and 1

5. _____

6. Which equation corresponds to the graph shown?



F $y = x^2 + 1$ H $y = x^2 - 1$
G $y = -x^2 - 1$ J $y = x^2$

6. _____

7. Describe how the graph of the function $g(x) = -3x^2 - 2$ is related to the graph of the function $f(x) = -3x^2$.

A translation of $f(x) = -3x^2$ reflected over the x-axis and down 2 units
B translation of $f(x) = -3x^2$ down 2 units
C translation of $f(x) = -3x^2$ reflected over the x-axis and up 2 units
D translation of $f(x) = -3x^2$ up 2 units

7. _____

8. Find the value of c that makes $x^2 - 5x + c$ a perfect square trinomial.

F –12.25 G –6.25 H 6.25 J 10

8. _____

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Chapter 9 Test, Form 1 *(continued)*

9. Which value of c makes $y^2 + 8y + c$ a perfect square trinomial?
A 4 B 16 C 64 D 8

9. _____

10. Which equation is equivalent to $x^2 + 2x - 3 = 0$?
F $(x + 1)^2 = 2$ G $(x - 1)^2 = 4$ H $(x - 1)^2 = 2$ J $(x + 1)^2 = 4$

10. _____

11. Solve the equation $2x^2 + 3x - 5 = 0$ by using the Quadratic Formula.
A $-2\frac{1}{2}, 1$ B $-5, 1$ C $-1, 2\frac{1}{2}$ D $-1, 5$

11. _____

12. State the value of the discriminant for $y = x^2 - 8x + 10$.
F 4.9 G 24 H 104 J 10.2

12. _____

13. Determine the number of real solutions of $n^2 - 5n - 6 = 0$.
A 1 real solution
B 2 real solutions
C infinitely many real solutions
D no real solutions

13. _____

14. **TREE HOUSE** Bob tosses his basketball onto the ground from his tree house. He tosses the basketball with an initial downward velocity of 8 feet per second. The equation $h = -16t^2 - 8t + 20$ represents the height h of the basketball after t seconds. How long does the basketball take to hit the ground?
F 0.9 s G 1.0 s H 9 s J 20 s

14. _____

15. State the value of the discriminant of $5x^2 + 9x = 3$.
A 5 B 12 C 21 D 141

15. _____

16. Look for a pattern in the table of values to determine which model best describes the data.

x	0	1	2	3
y	0	2	8	18

F linear G quadratic H exponential J none of these

16. _____

17. Which function best models the data in Question 16?
A $y = 2x$ B $y = 2x + 1$ C $y = 2x^2$ D $y = 2^x$

17. _____

18. Solve the equation $2x^2 - 5x - 3 = 0$.
F $\left\{-\frac{1}{2}, 3\right\}$ G $\left\{\frac{1}{2}, -3\right\}$ H $\left\{\frac{1}{2}, 3\right\}$ J $\left\{-\frac{1}{2}, -3\right\}$

18. _____

19. Solve the system algebraically, using substitution.
$y = x^2 + 8x + 11$
$y = x + 1$
A $(-5, -4), (-2, -1)$
B $(0, 1)$
C $(-5, -4), (2, 3)$
D $(2, 3), (5, 6)$

19. _____

20. Given that $f(x) = -2x^2 + 6x + 3$ and $g(x) = 8x - 1$, find $(f + g)(x)$.
F $-2x^2 - 2x + 4$ G $-2x^2 + 14x + 2$ H $2x^2 + 2x - 4$ J $2x^2 - 14x - 2$

20. _____

Bonus If $b^2 - 4ac = 0$, determine the number of real solutions of the equation $ax^2 + bx + c = 0$.

B. _____

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Chapter 9 Test Form 2

SCORE _____

Write the letter for the correct answer in the blank at the right of each question.

1. Consider the equation $y = x^2 + 5x - 6$. Determine whether the function has a maximum or minimum value. State the maximum of minimum value. What are the domain and range of the function?

A min.; 0
D: {all real numbers}
R: {all real numbers}

C min.; −12.25
D: {all real numbers}
R: $\{y \mid y \geq -12.25\}$

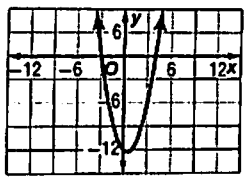
B max.; 0
D: {all real numbers}
R: $\{y \mid y \leq 0\}$

D max.; −12.25
D: $x \mid x \leq 2.5$
R: {all real numbers}

1. _____

2. Which equation corresponds to the graph shown?

F $y = x^2 + 7x - 12$
G $y = x^2 - x - 12$
H $y = x^2 + 5x + 12$
J $y = x^2 + 12x - 1$



2. _____

3. Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of $y = 2x^2 - 12x + 6$.

A $x = -3$; (−3, 60)
B $x = 3$; (3, −12)
C $x = -3$; (−3, 78)
D $x = 3$; (3, 6)

3. _____

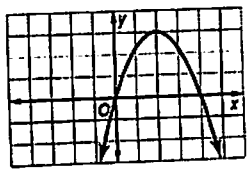
4. Find the coordinates of the vertex of the graph of $y = -2x^2 - 8$. Identify the vertex as a maximum or a minimum point.

F (−2, −16); minimum
G (−2, 8); maximum
H (2, −16); maximum
J (0, −8); maximum

4. _____

5. Which appear to be the root(s) of the quadratic equation whose related function is graphed at the right?

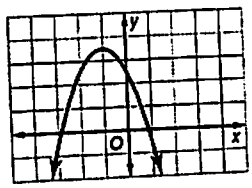
A 2
B 3
C 0, 4
D −4, 0



5. _____

6. One root of the quadratic equation whose related function is graphed lies between which two consecutive integers?

F −3 and −2
G 2 and 3
H −2 and −1
J 1 and 2



6. _____

7. How is the graph of $g(x) = x^2 - 3$ related to the graph of $f(x) = x^2$?

A translated down 3 units
B translated up 3 units
C translated right 3 units
D translated left 3 units

7. _____

8. Find the value of c that makes $x^2 + 10x + c$ a perfect square trinomial.

F −25
G −5
H 10
J 25

8. _____

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Chapter 9 Test, Form 2A *(continued)*

9. What value of c makes $x^2 + 24x + c$ a perfect square trinomial? 9. _____
A 576 B 144 C 24 D 12

10. Which step is *not* performed in the process of solving $n^2 - 12n - 10 = 0$ by completing the square? 10. _____
F Add 10 to each side. H Factor $n^2 - 12n - 10 = 0$.
G Add 36 to each side. J Take the square root of each side.

11. Which equation is equivalent to $2x^2 - 24x - 14 = 0$? 11. _____
A $(x - 6)^2 = 50$ B $(x - 3)^2 = 13$ C $(x - 3)^2 = 20$ D $(x - 6)^2 = 43$

12. State the value of the discriminant of $3x^2 + 8x = 2$. 12. _____
F 3 G 40 H 88 J 100

Solve each equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

13. $4x^2 + 11x - 3 = 0$ 13. _____
A –2.4, –0.3 B $-\frac{1}{4}$, 3 C 0.3, 2.4 D –3, $\frac{1}{4}$

14. $y^2 + 8y = 2$ 14. _____
F –8.2, 0.2 G 8.2, –0.2 H 0.3, 7.7 J –7.7, –0.3

15. Determine the number of real solutions of $7x^2 - 18x + 12 = 0$. 15. _____
A 2 B infinitely many C none D 1

16. Look for a pattern in the table of values to determine which model best describes the data. 16. _____

x	0	1	2	3
y	1	7	49	343

F linear G exponential H quadratic J none of these

17. Which function best models the data in Question 16? 17. _____
A $y = 7x$ B $y = 7x^2$ C $y = 7^x$ D $y = 7^x + 1$

18. Solve the equation $y^2 = 13y - 42$. 18. _____
F {–6, –7} G {6, 7} H {–6, 7} J {6, –7}

19. Solve the system algebraically, using substitution. 19. _____
$y = x^2 - 4x + 6$
$y = x + 2$
A (–4, –2), (1, 3) C (–1, 1), (4, 6)
B (1, 3), (4, 6) D (0, 2)

20. Given that $f(x) = 9x^2 - x + 5$ and $g(x) = 2x^2 - 5x + 2$, find $(g - f)(x)$. 20. _____
F $-7x^2 - 4x - 3$ G $5x^2 + 4x + 3$ H $7x^2 + 4x + 3$ J $-5x^2 - 4x - 3$

Bonus What is the equation of the axis of symmetry of a parabola if its x-intercepts are –3 and 5? B. _____