Chapter 9 Test Review

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, 0)
   D: {all real numbers}
   R: {all real numbers}

C min.; (–2.5, –12.25)
   D: {all real numbers}
   R: $\{y \mid y \geq -12.25\}$

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

D max.; (2.5, –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 $y = x^2 + 12x - 1$
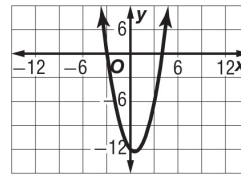
2. _____

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. _____

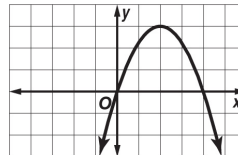**4.** Find the coordinates of the vertex of the graph of $y = -2x^2 - 8$. Identify the vertex as a maximum or a minimum.

F (–2, –16); minimum
G (–2, 8); maximum

H (2, –16); maximum
J (0, –8); maximum

4. _____

5. What are the root(s) of the quadratic equation whose related function is graphed at the right?
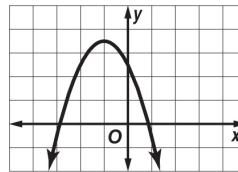
A 2
B 3

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

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

F –25   **G** –5   **H** 10   **J** 25

7. _____

8. _____

Chapter 9 Test Review *(continued)*

9. What value of c makes $3x^2 + 24x + c$ contain a perfect square trinomial?

    A 144   **B** 16   **C** 64   **D** 48   **9.** _____

10. Which step is *not* performed in the process of solving $n^2 - 12n - 10 = 0$ by completing the square?

    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.   **10.** _____

11. Which equation is equivalent to $2x^2 - 24x - 14 = 0$?

    A $(x - 6)^2 = 50$ **B** $(x - 3)^2 = 13$ **C** $(x - 3)^2 = 20$ **D** $(x - 6)^2 = 43$ **11.** _____

12. State the value of the discriminant of $3x^2 + 8x = 2$.

    F 3   **G** 40   **H** 88   **J** 100   **12.** _____

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

13. $4x^2 + 11x - 3 = 0$

    A $-2.4, -0.3$ **B** $-\frac{1}{4}, 3$ **C** $0.3, 2.4$ **D** $-3, \frac{1}{4}$ **13.** _____

14. $y^2 + 8y = 2$

    F $-8.2, 0.2$ **G** $8.2, -0.2$ **H** $0.3, 7.7$ **J** $-7.7, -0.3$ **14.** _____

15. Determine the number of real solutions of $7x^2 - 18x + 12 = 0$.

    A 2   **B** infinitely many   **C** none   **D** 1   **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	1	7	49	343

    F linear   **H** exponential   **G** quadratic   **J** none of these   **16.** _____

17. Which function best models the data in Question 16?

    A $y = 7x$ **B** $y = 7x^2$ **C** $y = 7^x$ **D** $y = 7^x + 1$ **17.** _____

18. If $f(x) = [\![x + 2]\!]$, find $f(1.5)$.

    F 0.5   **G** 3   **H** 3.5   **J** 4   **18.** _____

19. Which is *not* true about the graph of $f(x) = |3x + 2|$?

    A The range includes all real numbers.

    B It includes the point $(-3, 7)$.

    C The domain includes all real numbers.

    D The graph is "V-shaped."   **19.** _____

20. Which point is located on the graph of $f(x) = \begin{cases} \frac{1}{3}x + 2 \text{ if } x \leq 1 \\ \frac{1}{2}x + 1 \text{ if } x > 1 \end{cases}$?

    F $(-3, 1)$ **G** $(0, 1)$ **H** $(2, 0)$ **J** $(3, 3)$ **20.** _____

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