Name: _____ Period: _____ Date: _____

Unit 5 Test

1. **Write the quadratic, linear and constant term in the function $f(x) = 4x^2 - 8x + 3$**

   quadratic term: **linear term:** **constant term:**

2. **Write the quadratic function representing the data below.**

x	-1	0	2
$f(x)$	1	-1	7

   _____

3. **Find the equation of parabola using vertex, and y-intercept or vertex and a point given below.**

   Vertex (0,2), point (4,4)

4. **Given the vertex of the parabola, find the coefficients of the equation of parabola.**

   $y = c + x^2 + bx$ **, vertex = (1,4)**

5. **Determine the vertex, maximum or minimum value, and axis of symmetry of the parabola $y = -2.5(x+7)^2 + 10$.**

6. **Convert from standard form of a parabola to the vertex form.**

   $3y = 3x^2 - 12x + 18 \longrightarrow$

Name: _____ Period: _____ Date: _____

Unit 5 Test

7. **For the parabola of the form $y = a(x-h)^2 + k$, if a is negative, the parabola opens:**

   a. Upwards
   b. Downwards
   c. Neither
   d. All of these

8. **Factorize the following quadratic expression using the middle-term breaking method.**

   $x^2 - 20x + 75$ = _____

9. **Factorize using the factorization formulas.**

   $144x^2 - 72x + 9$ = _____

10. **In the middle-term breaking method, the middle term of the quadratic expression is re-written as two terms such that:**

    a. The algebraic sum of two terms is equal to the middle term.
    b. The algebraic product of two terms is equal to the product of the quadratic term and the constant term.
    c. Both a and b
    d. None of these

11. **Find the solution of the quadratic equation given below.**

    $x^2 - x - 6 = 0$

    _____

12. **Find the solution of the quadratic equation given below.**

    $12x^2 - 36x - 48 = 0$

    _____

Name: _____ Period: _____ Date: _____

Unit 5 Test

13. The solution of $x^2 - 9x - 36 = 0$ is:

a. $x = 4, -9$
b. $x = 4,9$
c. $x = 3, -9$
d. $x = -3,12$

14. Solve and write the simplified answer.

$(2 + 5i)(2 - 5i)$ = _____

15. Find the absolute value of the complex number given below.

$-6 - 8i$

16. If $i^2 = -1$, then i^3 is equal to:

a. 0
b. i
c. $-i$
d. -1

17. Solve the equation $x^2 + 2x - 7 = 0$ by completing the square.

_____

18. Find all the complex solutions of $x^2 + 6x + 10 = 0$ by completing squares.

_____

19. Solve the quadratic equation $x^2 - 15x + 56 = 0$ using the quadratic formula.

_____

20. Solve the quadratic equation $4x^2 + x + 5 = 0$ using the quadratic formula.

_____

Name: _____ Period: _____ Date: _____

Unit 5 Test

ANSWERS:

1. **Write the quadratic, linear and constant term in the function $f(x) = 4x^2 - 8x + 3$**

   quadratic term: $4x^2$ **linear term: $-8x$** **constant term: 3**

2. **Write the quadratic function representing the data below.**

x	-1	0	2
$f(x)$	1	-1	7

   ___$f(x) = x^2 + x + 1$___

3. **Find the equation of parabola using vertex, and y-intercept or vertex and a point given below.**

   Vertex (0,2), point (4,4)

   $y = (1/8)\,x^2 + 2$

4. **Given the vertex of the parabola, find the coefficients of the equation of parabola.**

   $y = c + x^2 + bx$ **, vertex = (1,4)**

   $b = -2, c = 5$

5. **Determine the vertex, maximum or minimum value, and axis of symmetry of the parabola $y = -2.5(x + 7)^2 + 10$.**

   Vertex (-7,10) ; Maximum value=10 ; Axis of symmetry x= -7

6. **Convert from standard form of a parabola to the vertex form.**

   $3y = 3x^2 - 12x + 18 \longrightarrow y = (x - 2)^2 + 2$

Unit 5 Test

7. For the parabola of the form $y = a(x-h)^2 + k$, if a is negative, the parabola opens:

a. Upwards
b. Downwards
c. Neither
d. All of these

8. Factorize the following quadratic expression using the middle-term breaking method.

$x^2 - 20x + 75$ = ___$(x-15)(x-5)$___

9. Factorize using the factorization formulas.

$144x^2 - 72x + 9$ = ___$(12x-3)^2$___

10. In the middle-term breaking method, the middle term of the quadratic expression is re-written as two terms such that:

a. The algebraic sum of two terms is equal to the middle term.
b. The algebraic product of two terms is equal to the product of the quadratic term and the constant term.
c. Both a and b
d. None of these

11. Find the solution of the quadratic equation given below.

$x^2 - x - 6 = 0$

___$x = 3, -2$___

12. Find the solution of the quadratic equation given below.

$12x^2 - 36x - 48 = 0$

___$x = 4, -1$___

Unit 5 Test

13. The solution of $x^2 - 9x - 36 = 0$ is:

a. $x = 4, -9$
b. $x = 4,9$
c. $x = 3, -9$
d. $x = -3,12$

14. Solve and write the simplified answer.

$(2 + 5i)(2 - 5i)$ = ____**29**____

15. Find the absolute value of the complex number given below.

$$-6 - 8i$$

___**10**___

16. If $i^2 = -1$, then i^3 is equal to:

a. 0
b. i
c. $-i$
d. -1

17. Solve the equation $x^2 + 2x - 7 = 0$ by completing the square.

___$-1 \pm 2\sqrt{2}$___

18. Find all the complex solutions of $x^2 + 6x + 10 = 0$ by completing squares.

____$-3 \pm i$____

19. Solve the quadratic equation $x^2 - 15x + 56 = 0$ using the quadratic formula.

____**7,8**____

Unit 5 Test

20. Solve the quadratic equation $4x^2 + x + 5 = 0$ using the quadratic formula.

$$\frac{-1 \pm i\sqrt{79}}{8}$$