

# Chapter 4 Test

# Test Review

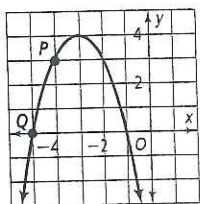
Form G

## Unit 3 Test

(also look at notes & quizzes!)

### Do you know HOW?

1. Write the equation of the parabola in standard form. Find the coordinates of the points on the other side of the axis of symmetry corresponding to  $P$  and  $Q$ . Label these points  $P'$  and  $Q'$ , respectively.



Sketch a graph of the quadratic function with the given vertex and through the given point.

2. vertex  $(3, 4)$ ; point  $(5, 8)$

3. vertex  $(-3, -2)$ ; point  $(1, 2)$

Graph each quadratic function. Name the axis of symmetry and the coordinates of the vertex.

4.  $y = x^2 + 5$

5.  $y = x^2 - 4x - 3$

6.  $y = -x^2 + 7x - 2$

7.  $y = \frac{1}{2}x^2 - 6$

Simplify each expression.

8.  $(3 + i) - (7 + 6i)$

9.  $(3 - 4i)(5 + 2i)$

10.  $(-4 - 9i) + (5 - 7i)$

11.  $3\sqrt{-25} + 4$

Solve each quadratic equation.

12.  $x^2 - 16 = 0$

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

14.  $x^2 + 3x - 10 = 0$

15.  $3x^2 + 48 = 0$

16. Anthony has 10 ft of framing and wants to use it to make the largest rectangular picture frame possible. Find the maximum area that can be enclosed by his frame.

**Chapter 4 Test** (continued)

Form G

Write each function in vertex form. Sketch the graph of the function and label its vertex.

17.  $y = x^2 + 4x - 7$

18.  $y = -x^2 + 4x - 1$

19.  $y = 3x^2 + 18x$

20.  $y = \frac{1}{2}x^2 - 5x + 12$

Evaluate the discriminant of each equation. Determine how many real solutions each equation has.

21.  $x^2 + 5x + 6 = 0$

22.  $3x^2 - 4x + 3 = 0$

23.  $-2x^2 - 5x + 4 = 0$

24.  $16x^2 - 8x + 1 = 0$

Solve each system.

25. 
$$\begin{cases} y = -x^2 + 5x + 1 \\ y = 2x - 3 \end{cases}$$

26. 
$$\begin{cases} y = x^2 - x + 2 \\ y = 2x^2 + x - 6 \end{cases}$$

Solve the following systems of inequalities by graphing.

27. 
$$\begin{cases} y < x^2 + 2x - 3 \\ y > x^2 - 9 \end{cases}$$

28. 
$$\begin{cases} y > x^2 + 3x - 4 \\ y < -x^2 - x + 2 \end{cases}$$

**Do you UNDERSTAND?**

29. **Reasoning** Suppose a parabola has a vertex in Quadrant IV and  $a < 0$  in its equation  $y = ax^2 + bx + c$ . How many real solutions will the equation  $ax^2 + bx + c = 0$  have?

30. **Open-Ended** Write a complex number with an absolute value between 3 and 8.

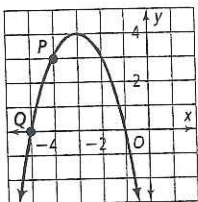
# Chapter 4 Test

Form G

## Do you know HOW?

1. Write the equation of the parabola in standard form. Find the coordinates of the points on the other side of the axis of symmetry corresponding to P and Q. Label these points P' and Q', respectively.

*use Quad Red or matrix*



$$y = -x^2 - 6x - 5$$

$$P'(-2, 3)$$

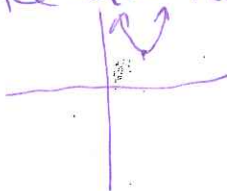
$$Q'(-4, 3)$$

Sketch a graph of the quadratic function with the given vertex and through the given point. *and give the equation!! (vertex and standard form)*

2. vertex (3, 4); point (5, 8)

$$y = x^2 - 6x + 13$$

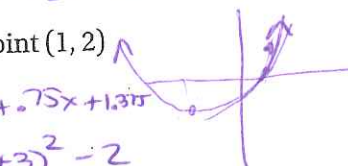
$$y = (x - 3)^2 + 4$$



3. vertex (-3, -2); point (1, 2)

$$y = -0.125x^2 + 0.75x + 1.375$$

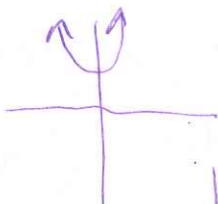
$$y = -0.125(x + 3)^2 - 2$$



Graph each quadratic function. Name the axis of symmetry and the coordinates of the vertex.

4.  $y = x^2 + 5$

AOS  $x = 0$   
V (0, 5)



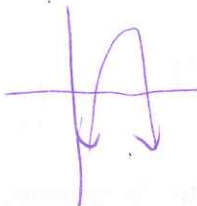
5.  $y = x^2 - 4x - 3$

AOS  $x = 2$   
V (2, -7)



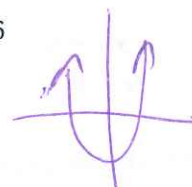
6.  $y = -x^2 + 7x - 2$

AOS  $x = 3.5$   
V (3.5, 10.25)



7.  $y = \frac{1}{2}x^2 - 6$

AOS  $x = 0$   
V (0, -6)



Simplify each expression.

8.  $(3 + i) - (7 + 6i)$

$-4 - 5i$

9.  $(3 - 4i)(5 + 2i)$

$23 - 14i$

10.  $(-4 - 9i) + (5 - 7i)$

$1 - 16i$

11.  $3\sqrt{-25} + 4$

$4 + 15i$

Solve each quadratic equation.

12.  $x^2 - 16 = 0$

$x = 4, -4$

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

$x = \frac{3 \pm \sqrt{97}}{4}$

14.  $x^2 + 3x - 10 = 0$

$x = 2, -5$

15.  $3x^2 + 48 = 0$

$x = \pm 4i$

16. Anthony has 10 ft of framing and wants to use it to make the largest rectangular picture frame possible. Find the maximum area that can be enclosed by his frame.

**Chapter 4 Test** (continued)

Form G

Write each function in vertex form. Sketch the graph of the function and label its vertex.

17.  $y = x^2 + 4x - 7$

$y = (x+2)^2 - 11$

18.  $y = -x^2 + 4x - 1$

$y = -(x-2)^2 + 3$

19.  $y = 3x^2 + 18x$

$y = 3(x+3)^2 - 27$

20.  $y = \frac{1}{2}x^2 - 5x + 12$

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

Evaluate the discriminant of each equation. Determine how many real solutions each equation has.

21.  $x^2 + 5x + 6 = 0$

$d = 1$  2 real

22.  $3x^2 - 4x + 3 = 0$

$d = -20$  2 imaginary, no real

23.  $-2x^2 - 5x + 4 = 0$

$d = 57$  2 real

24.  $16x^2 - 8x + 1 = 0$

$d = 0$  1 real

Solve each system.

25.  $\begin{cases} y = -x^2 + 5x + 1 \\ y = 2x - 3 \end{cases}$   $x = -1, 4$

26.  $\begin{cases} y = x^2 - x + 2 \\ y = 2x^2 + x - 6 \end{cases}$   $x = -4, 2$

Solve the following systems of inequalities by graphing.

27.  $\begin{cases} y < x^2 + 2x - 3 \\ y > x^2 - 9 \end{cases}$

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**Do you UNDERSTAND?**

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