

AGENDA

1) Take out HW to be Checked
HW Questions?

2) "Quadratics Functions Review" Packet

HW: Finish "Quadratics Function Review" Packet
Quadratics TEST Part I tomorrow

Math 518

Name _____

Block _____

Quadratic Functions REVIEW

I. Section 5.1

- Define and identify quadratic functions
- Write quadratic functions in standard form
- Identify shape of quadratic function

1. Which of the following functions are quadratic?

- a. $y = x(2x - 4)$ b. $y = 4x + 1$
 c. $y = 2x^3 + 4x^2 + 3x - 1$ d. $y = 17 - 2x - 4x^2$

2. Show that the following is a quadratic function by writing it in the form

$f(x) = ax^2 + bx + c$. Identify a, b, and c.

a. $f(x) = (x + 2)^2 - 5$ _____ a = b = c =

b. $f(x) = 3(2x - 1)(4 - 3x)$ _____ a = b = c =

3. State whether the parabola opens up or down and whether the y-coordinate of the vertex is the maximum or the minimum value of the function.

a. $f(x) = (x + 3)(x - 5)$ _____

b. $f(x) = 12x - x^2$ _____

II. Section 5.2

- Solving quadratic equations by taking the square root of both sides

1. Solve each equation by taking square roots. Give both EXACT and APPROXIMATE answers to the nearest hundredth.

a. $4x^2 = 80$ b. $2x^2 - 3 = 95$ c. $6(x + 2)^2 = 30$

III. Section 5.3

- Solving quadratic equations by factoring and using the Zero Product Property

1. Solve by factoring and using the Zero Product Property.

a. $x^2 - 5x + 6 = 0$

b. $2x = 35 - x^2$

c. $16 = x^2 - 6x$

2. Find the zeros of the function by factoring and using the Zero Product Property.

a. $f(x) = 10x^2 - 20x$

b. $y = x^2 + 48x - 100$

c. $f(x) = x^2 - 25$

IV. Section 5.4

- Solving by completing the square

1. Complete the square: $x^2 - 14x + \underline{\hspace{2cm}}$

2. Solve by completing the square.

$$x^2 + 8x - 2 = 0$$

V. Section 5.5

- Solving using the quadratic formula
- Find the axis of symmetry and vertex of a parabola

1. Write the quadratic formula:

$$x =$$

2. Solve by using the quadratic formula. Give both EXACT and APPROXIMATE solutions.

a. $t^2 - 9t + 5 = 0$

b. $5x^2 + 16x - 6 = 3$

3. For each quadratic function below, find the equation for the axis of symmetry and find the coordinates of the vertex.

a. $y = 4 - 10x + 5x^2$

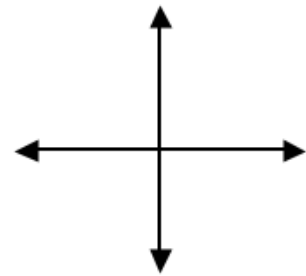
b. $y = -2x^2 + 8x + 13$

VI. Graphing parabolas

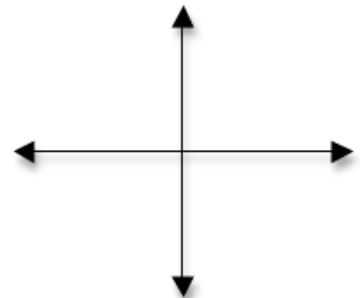
- Find x-intercepts (zeros or roots)
- Find y-intercept
- Find vertex
- Find other points on graph

1. If the roots of a parabola are $(-5, 0)$ and $(7, 0)$ then what is the axis of symmetry?
2. If $(5, 11)$ is a point on a parabola, and the axis of symmetry is $x = 8$, then give another point on the parabola using symmetry.
3. The y-intercept of $f(x) = 2x^2 - 5x + 1$ is _____.
4. What are you finding when you “solve for roots” or “solve for zeros”?
5. What is the vertex if the axis of symmetry is $x = 2$ and the range is $y \leq 5$?
6. If the vertex of a parabola that opens upward is $(-4, 3)$, find...
axis of symmetry _____ domain _____ range _____

7. Sketch a quadratic graph with a maximum vertex and no roots.



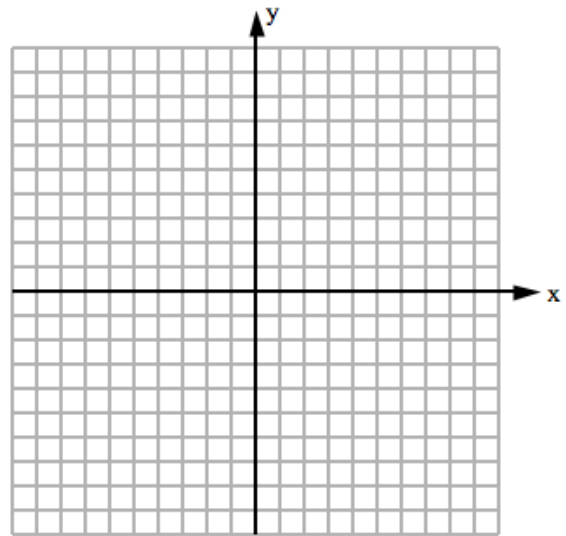
8. Sketch a quadratic graph that has a minimum vertex and one root.



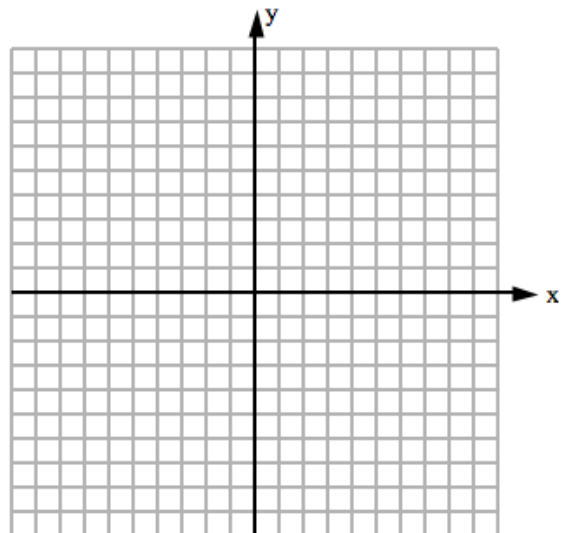
9. For each of the following, find the
x-intercepts,
the vertex,
the y-intercept and
two other points on the parabola.

Plot at least 5 points of the parabola, and then graph the parabola.

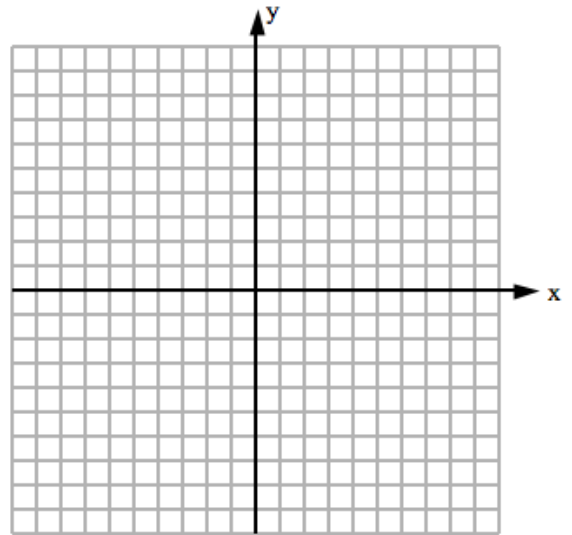
a. $y = 3x - x^2$



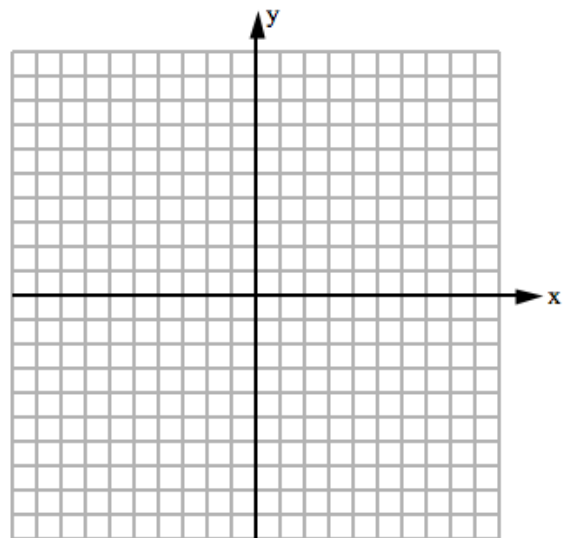
b. $y = x^2 + 4x + 4$



c. $y = 2x^2 + 4x + 5$



d. $y = 14 + 8x - 2x^2$



Answer Key

Section I.

1. a, d

2. a. $f(x) = x^2 + 4x - 1$ $a = 1, b = 4, c = -1$

b. $f(x) = -18x^2 + 33x - 12$ $a = -18, b = 33, c = -12$

3. a. opens up, min b. opens down, max

Section II.

1. a. $12\sqrt{10}$ b. $4x^3y^2\sqrt{3y}$ c. $5/7$

2. a. $x = 2\sqrt{5}$ or $-2\sqrt{5}$
 $x \approx 4.47$ or -4.47

b. $x = 7$ or -7

c. $x = \sqrt{5} - 2$ or $-\sqrt{5} - 2$
 $x \approx .24$ or -4.24

Section III.

1. a. $x = 2$ or 3 b. $x = -7$ or 5 c. $x = 8$ or -2

2. a. $x = 0$ or 2 b. $x = 2$ or -50 c. $x = 5$ or -5

Section IV.

1. 49

2. $x = 3\sqrt{2} - 4$ or $-3\sqrt{2} - 4$
 $x \approx -8.24$ or $.24$

Section V.

1. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

2. a. $t = \frac{9 \pm \sqrt{61}}{2} \approx 8.41$ or $.59$

b. $x = \frac{-16 \pm \sqrt{436}}{10} \approx .49$ or -3.69

3. a. $x = 1$, vertex = $(1, -1)$

b. $x = 2$ vertex = $(2, 21)$

Section VI.

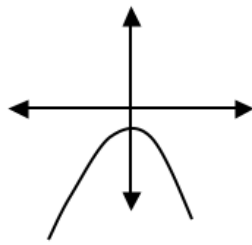
1. $x = 1$ 2. $(11, 11)$ 3. 1 4. the x intercepts 5. $(2, 5)$

6. axis of symmetry: $x = -4$ domain: all real numbers range $y \geq 3$

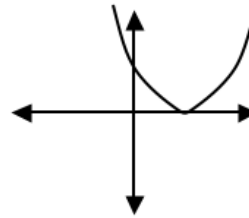
Section VI.

1. $x = 1$ 2. (11, 11) 3. 1 4. the x intercepts 5. (2, 5)
 6. axis of symmetry: $x = -4$ domain: all real numbers range $y \geq 3$

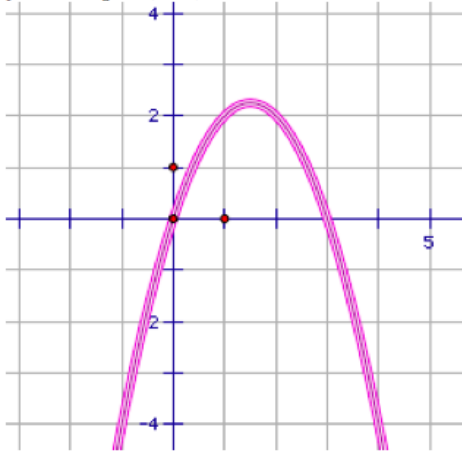
7.



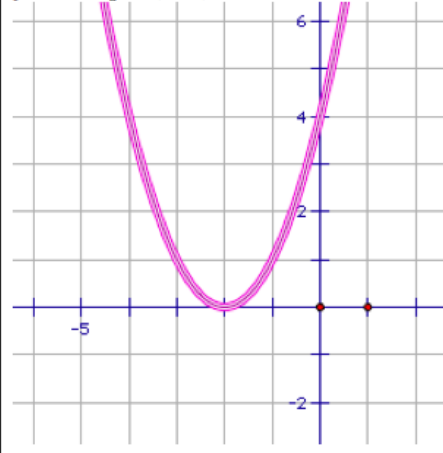
8.



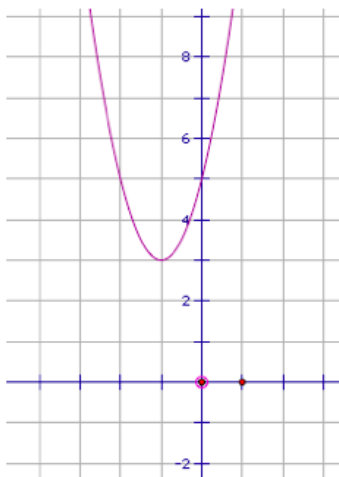
9.a. $y = 3x - x^2$
 x -intercepts: (0, 0) and (3, 0)
 vertex: (1.5, 2.25)
 y -intercept: (0, 0)



b. $y = x^2 + 4x + 4$
 x -intercepts: (-2, 0)
 vertex: (-2, 0)
 y -intercept: (0, 4)



c. $y = 2x^2 + 4x + 5$
 x -intercepts: none
 vertex: (-1, 3)
 y -intercept: (0, 5)



d. $y = 14 + 8x - 2x^2$
 x -intercepts: (-1.32, 0) and (5.32, 0)
 vertex: (2, 22)
 y -intercept: (0, 14)

