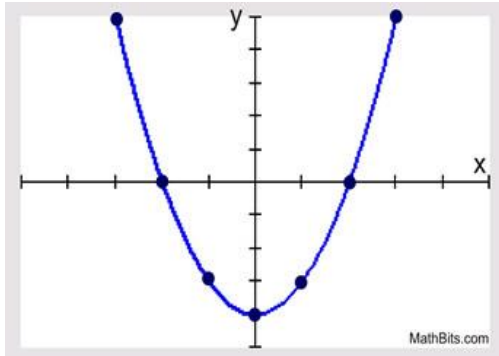## Quadratics Exam Study Guide

<mark>I can identify different properties of quadratic functions.</mark>
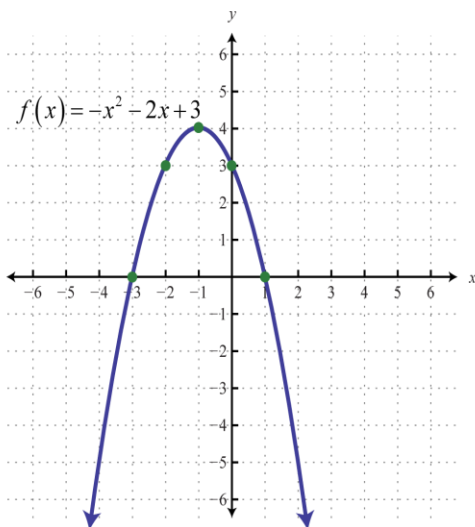
1.

Vertex: _____

AOS:_____

Zeros:_____

Max/Min:_____

2.

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

Vertex: _____

AOS:_____

Solutions:_____

Max/Min:_____

3. Identify the vertex of each quadratic function.

a. $y = -4(x + 3)^2 - 7$ Vertex: _____

b. $y = 7(x - 3)^2 + 2$ Vertex: _____

c. $y = x^2 - 2$ Vertex: _____

d. . $y = 3(x + 2)^2$ Vertex: _____

4. Match the equations to the graph

$y = 4(x + 2)^2 - 3$
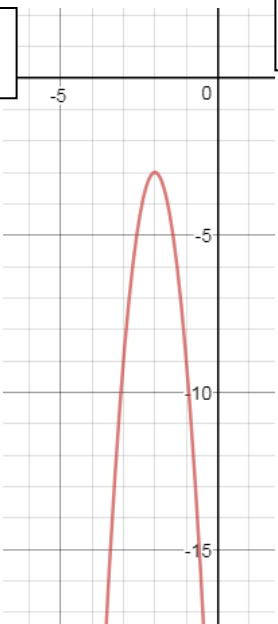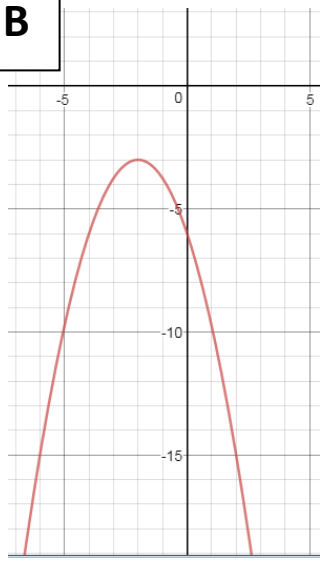
☐

$y = .25(x + 2)^2 - 3$

☐

$y = -.75(x + 2)^2 - 3$
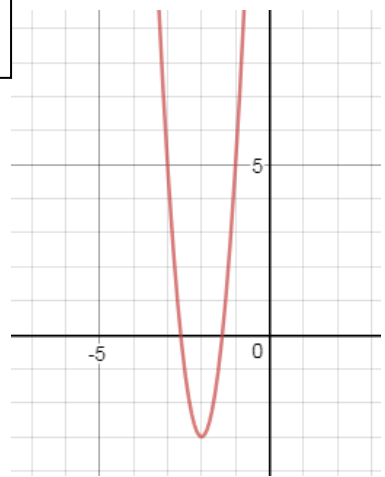
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$y = -6(x + 2)^2 - 3$

☐
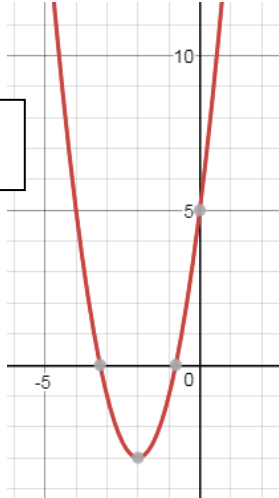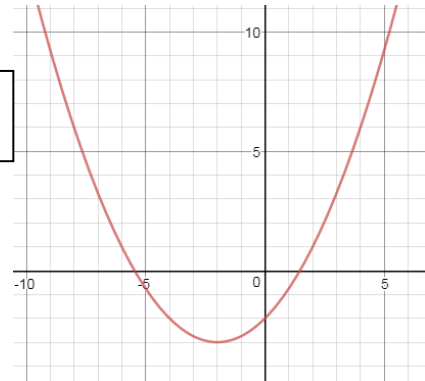
$y = 8(x + 2)^2 - 3$

☐

A

B

C

D
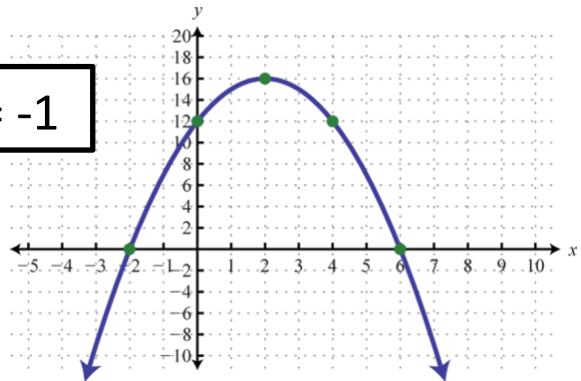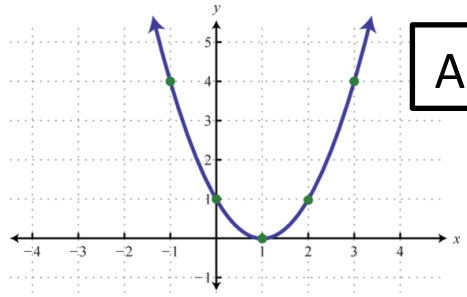
E

I can represent a quadratic function by a table, graph, and equation

5. Write an equation in vertex form for each quadratic function.

A = -1

Vertex:_____

Equation:_____

A = 1

Vertex:_____

Equation:_____

6. Graph the quadratic functions. Your graph **must include** the **vertex, axis of symmetry, 3 points on a table**, and **5 points on the graph**.

a.

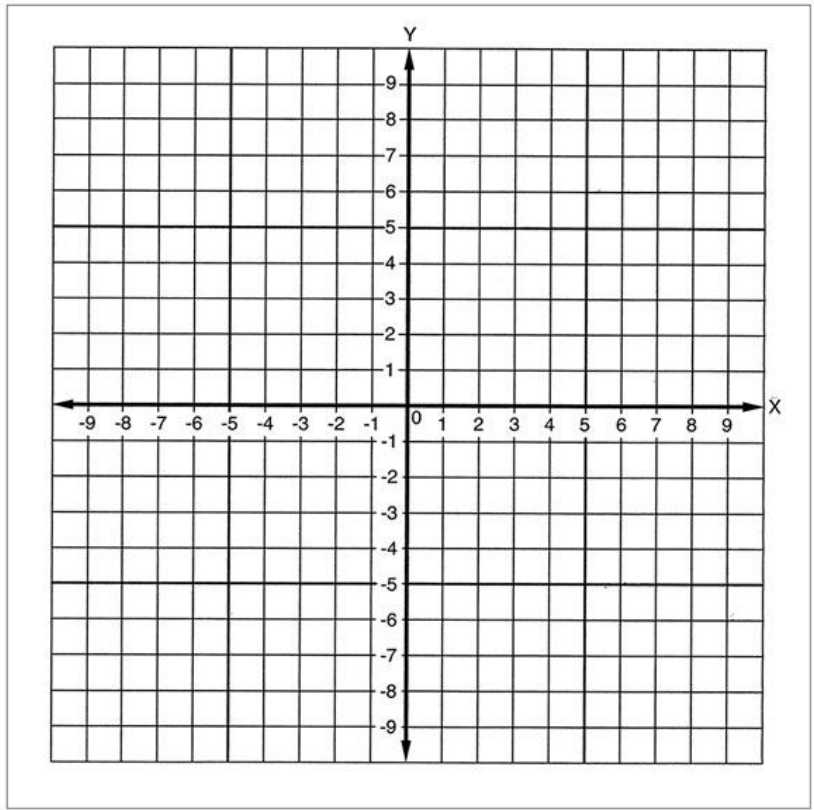$$y = (x - 4)^2 + 1$$

X	Y

Vertex: _____

Circle one

Maximum or Minimum

b.

$$y = -2(x - 1)^2 + 2$$

X	Y

Vertex: _____

Circle one

Maximum or Minimum

7. Find the vertex of the quadratic. Show all work below.

$y = 3x^2 - 24x - 7$

Vertex:

8. Graph the quadratic. Must show all work to find vertex.

$y = 2x^2 + 4x + 1$

X	y

Vertex:

9. Convert the equation to standard form

$$y = -1(x - 3)^2 + 2$$

10.) $x^2 - 8x + 16 = 0$	11.) $6x^2 + 66x + 60 = 0$
Factored Form: : _____	Factored Form: : _____
Solutions: _____	Solutions: _____
12.) $x^2 + 10x + 24 = 0$	13.) $x^2 - 11x + 28 = 0$
Factored Form: : _____	Factored Form: : _____
Solutions: _____	Solutions: _____
14.) $x^2 - 2x - 35 = 0$	15.) $x^2 - 5x - 6 = 0$
Factored Form: : _____	Factored Form: : _____
Solutions: _____	Solutions: _____

Sketch an example of each on a graph

16.) One solution

17.) Two solutions

18.) No solutions

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve using the quadratic formula # 19 - 22

19. $5x^2 - 9x + 4 = 0$	20. $4x^2 + 9x - 34 = 0$

21. $2x^2 + 4x - 126 = 0$	22. $4x^2 + 11x - 3 = 0$

Solve by taking the square root

23.)

    a. $4x^2 = 100$ b. $x^2 - 6 = -6$ c. $x^2 - 6 = -20$

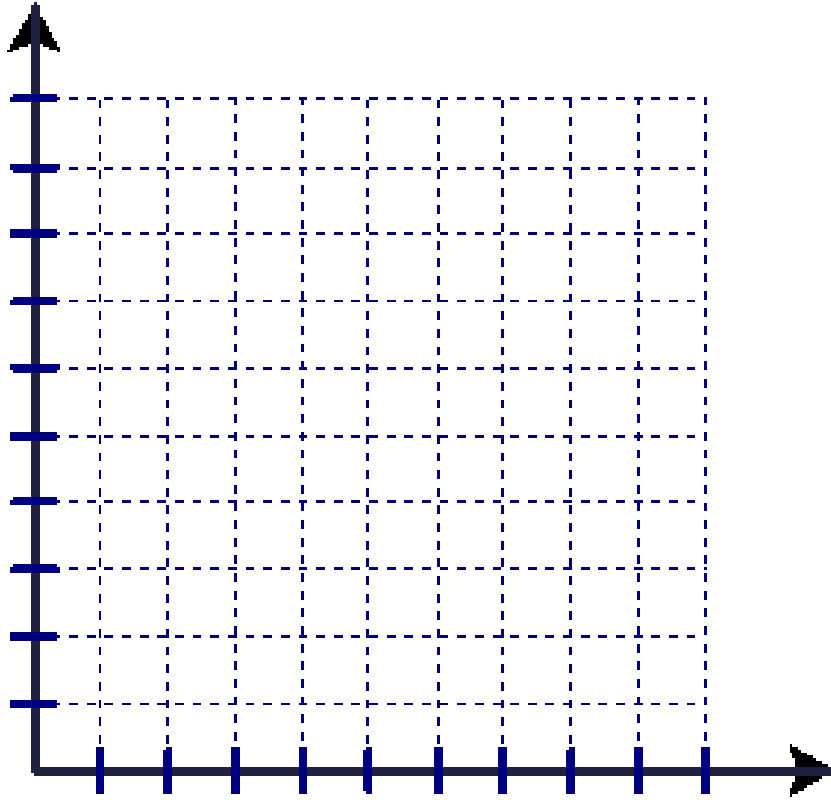**Find the zeros of the function (use any method)**

24.)

   a. $2x^2 - 12x + 16 = 0$ b. $x^2 - 6x + 5 = 0$ c. $2x^2 - 50 = 0$

25.) A ball is thrown into the air with an initial upward velocity. The height h in feet after t seconds is given by the function $h(t) = -16t^2 + 48t + 4$

a) In how many seconds will the ball reach its maximum height?

b) What is the balls maximum height?

c) How long for the ball to hit the ground?

d) What will the height, in feet, of the ball be after 4 seconds?