

Name: _____

Unit 8: Quadratic Equations

Date: _____ Bell: _____

Homework 1: Intro to Quadratics

** This is a 2-page document! **

Complete the following statements.

1. The standard form of a quadratic equation is $y = ax^2 + bx + c$.2. The curve formed by a quadratic equation is called a parabola.3. The formula for the axis of symmetry is $x = \frac{-b}{2a}$.4. If the vertex is the highest point on the graph, it is called a maximum.5. If a vertex is the lowest point on a graph, it is called a minimum.Find the axis of symmetry and vertex for the following quadratic equations.
Then, sketch the parabola and label all parts.

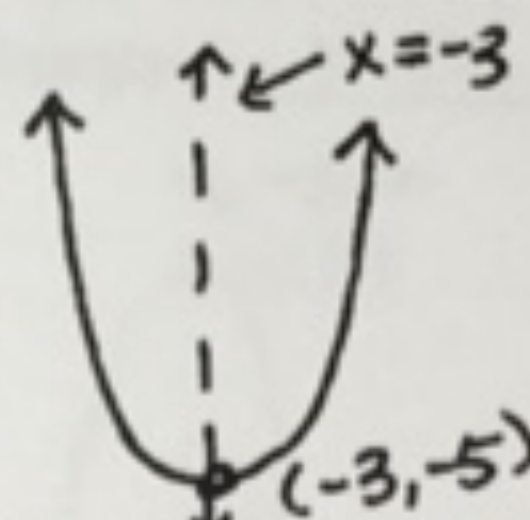
6. $y = x^2 + 6x + 4$

$$x = \frac{-(-6)}{2(1)} = \frac{-6}{2} = -3$$

Axis of Symmetry: $x = -3$

Vertex: $(-3, -5)$

Sketch:



$$y = (-3)^2 + 6(-3) + 4$$

$$y = 9 - 18 + 4$$

$$y = -5$$

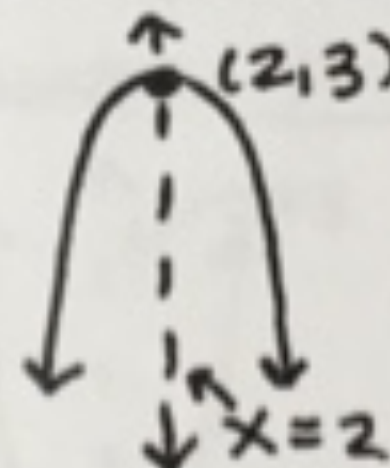
7. $y = -2x^2 + 8x - 5$

$$x = \frac{-(-8)}{2(-2)} = \frac{-8}{-4} = 2$$

Axis of Symmetry: $x = 2$

Vertex: $(2, 3)$

Sketch:



$$y = -2(2)^2 + 8(2) - 5$$

$$y = -8 + 16 - 5$$

$$y = 3$$

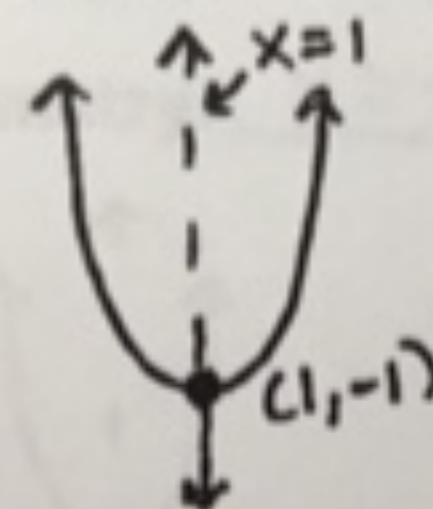
8. $y = x^2 - 2x$

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

Axis of Symmetry: $x = 1$

Vertex: $(1, -1)$

Sketch:



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

$$y = 1 - 2$$

$$y = -1$$

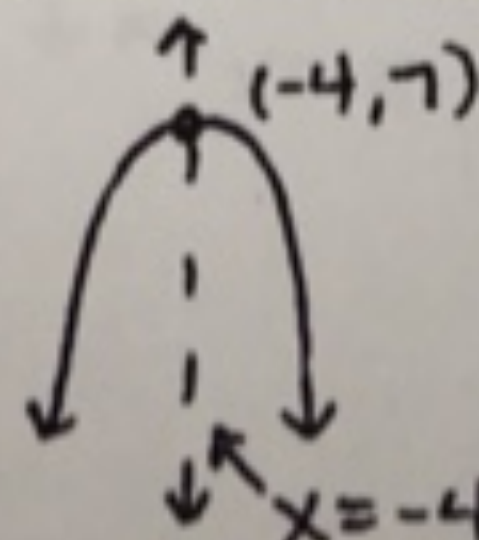
9. $y = -x^2 - 8x - 9$

$$x = \frac{-(-8)}{2(-1)} = \frac{8}{-2} = -4$$

Axis of Symmetry: $x = -4$

Vertex: $(-4, 7)$

Sketch:



$$y = (-4)^2 - 8(-4) - 9$$

$$y = -16 + 32 - 9$$

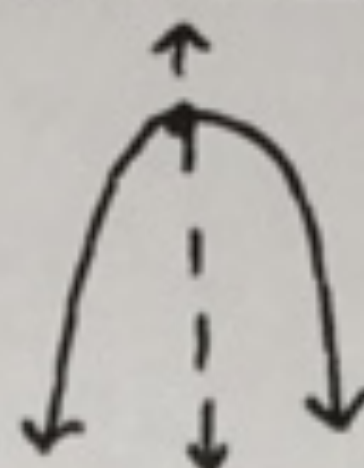
$$y = 7$$

10. $y = -5x^2 - 20x - 26$

$$x = \frac{-(-20)}{2(-5)} = \frac{20}{-10} = -2$$

Axis of Symmetry: $x = -2$

Sketch:



Vertex: $(-2, -6)$

$$y = -5(-2)^2 - 20(-2) - 26$$

$$y = -20 + 40 - 26$$

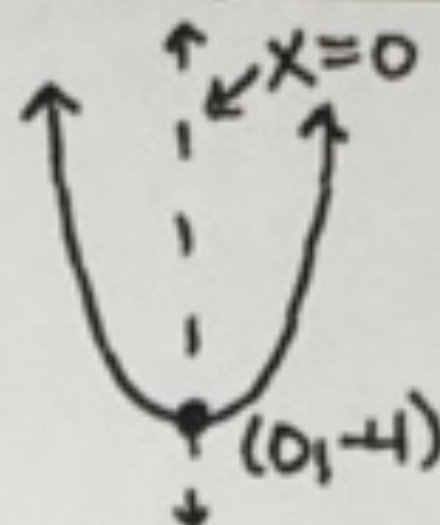
$$y = -6$$

11. $y = x^2 - 4$

$$x = \frac{-(-0)}{2(1)} = 0$$

Axis of Symmetry: $x = 0$

Sketch:



Vertex: $(0, -4)$

$$y = (0)^2 - 4$$

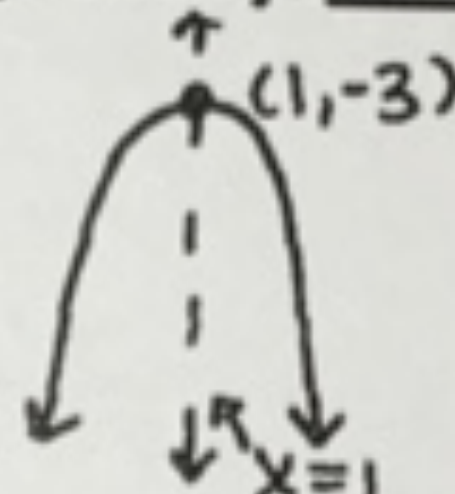
$$y = -4$$

12. $y = -x^2 + 2x - 4$

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

Axis of Symmetry: $x = 1$

Sketch:



Vertex: $(1, -3)$

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

$$y = -1 + 2 - 4$$

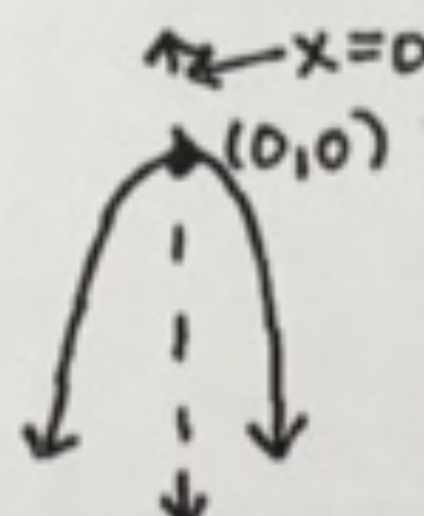
$$y = -3$$

13. $y = -3x^2$

$$x = \frac{-(-0)}{2(-3)} = 0$$

Axis of Symmetry: $x = 0$

Sketch:



Vertex: $(0, 0)$

$$y = -3(0)^2$$

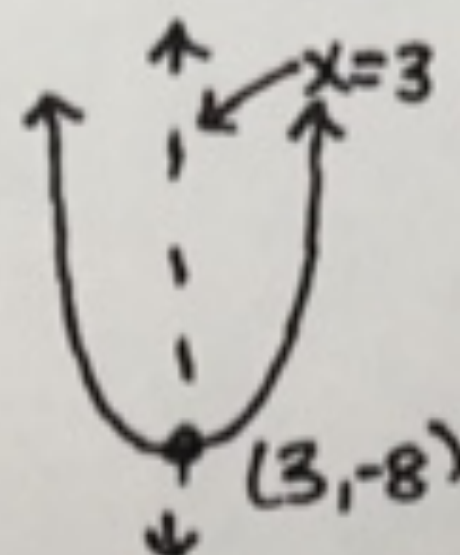
$$y = 0$$

14. $y = 2x^2 - 12x + 10$

$$x = \frac{-(-12)}{2(2)} = \frac{12}{4} = 3$$

Axis of Symmetry: $x = 3$

Sketch:



Vertex: $(3, -8)$

$$y = 2(3)^2 - 12(3) + 10$$

$$y = 18 - 36 + 10$$

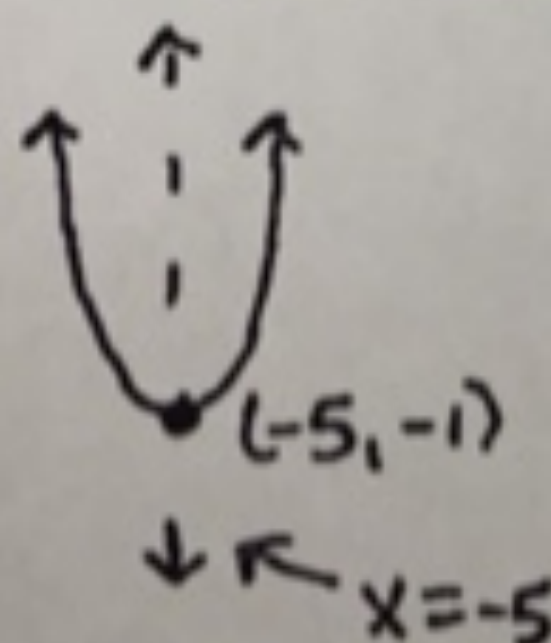
$$y = -8$$

15. $y = x^2 + 10x + 24$

$$x = \frac{-(-10)}{2(1)} = \frac{10}{2} = -5$$

Axis of Symmetry: $x = -5$

Sketch:



Vertex: $(-5, -1)$

$$y = (-5)^2 + 10(-5) + 24$$

$$y = 25 - 50 + 24$$

$$y = -1$$