**Algebra 2**, Unit 9: Quadratics **#27a**

**Day #27a: Graphing and IDing Characteristics of Vertex Form**

A **quadratic function** is a function that’s largest exponent is \_\_\_\_\_\_ .

The *graph* of a quadratic function is a U-shaped graph called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.**

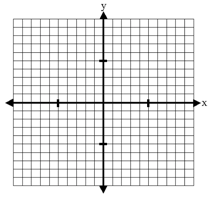
The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the family of quadratic functions is **y = x2**.

**Vertex:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Axis of Symmetry:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Minimum or Maximum Value \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

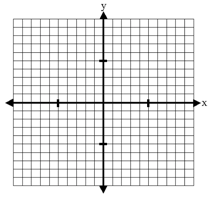
**Graph the quadratic functions on the same graph. We will always graph quadratics using FIVE points.**

1. y = x2



Vertex: \_\_\_\_\_\_\_\_\_\_\_\_ A.O.S. \_\_\_\_\_\_\_\_\_\_\_\_\_ Does this graph have a minimum or

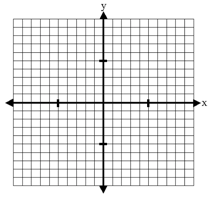
maximum point?

1. y = -x2



Vertex: \_\_\_\_\_\_\_\_\_\_\_\_ A.O.S. \_\_\_\_\_\_\_\_\_\_\_\_\_ Does this graph have a minimum or

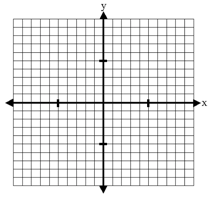
maximum point?

1. y = (x - 2)2 + 3



Vertex: \_\_\_\_\_\_\_\_\_\_\_\_ A.O.S. \_\_\_\_\_\_\_\_\_\_\_\_\_ Does this graph have a minimum or

maximum point?

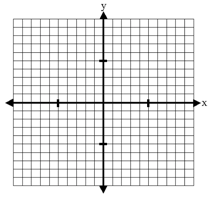
1. y = -(x + 3)2 + 5



Vertex: \_\_\_\_\_\_\_\_\_\_\_\_ A.O.S. \_\_\_\_\_\_\_\_\_\_\_\_\_ Does this graph have a minimum or

maximum point?

5. y = -2(x + 3)2 + 5



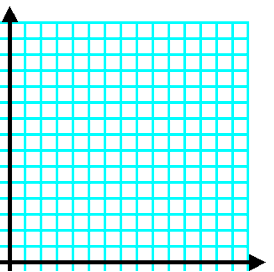
Vertex: \_\_\_\_\_\_\_\_\_\_\_\_ A.O.S. \_\_\_\_\_\_\_\_\_\_\_\_\_ Does this graph have a minimum or

maximum point?

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| --- |
| **Summarize by looking at your work on p.1-2**   1. How can you know by just looking at an equation if a quadratic will have a **minimum or maximum** point? 2. How can you know by just looking at an equation what the **vertex** is? 3. How can you know by just looking at an equation what the **axis of symmetry** is? |

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| **VERTEX FORM:** |

1. Remember from WS#24 when DeAndre and Bree were kicking a football and it could be modeled by the function y = -16(x - 2)2 + 64.
   1. What is the vertex? ( \_\_\_\_, \_\_\_\_ )
   2. What is the axis of symmetry? \_\_\_\_\_\_\_\_\_\_
   3. Will it have a minimum or maximum?
   4. Now figure out what **values for x** should go in the table so you have two numbers on either side of the vertex, and make the table. Then, graph the function. Make sure to label your axes with numbers.





1. How would the graph of y = (x - 2)2 + 3 be affected if the function were changed to y = -(x - 2)2 + 4?

**Solving Practice**

Solve each equation.

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| 1. x2 = 25 | 2. (x + 3)2 = 25 |
| 3. (x + 3)2 - 14 = 11 | 4. 3(x + 3)2 - 11 = 64 |