Algebra 1   Name_____

Intro to Quadratic Functions   Notes

<u>Given the following equation, fill in the table of values. Then plot the points on the graph</u>.

x	y
-3	
-2	
-1	
0	
1	
2	
3	

$$y = x^2$$
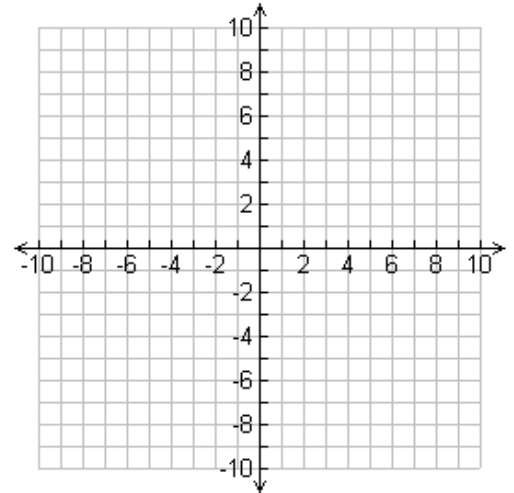
<u>Answer the following questions about your table or graph</u>:

1. Is your graph a function? _____   Is your graph linear?_____

    Describe the shape of the graph:_____

2. Looking at the table, is there a constant rate of change in the x-values?_____

    Is there a constant rate of change in the y-values?_____

3. Does the graph seem to have a maximum or minimum point? _____   where? _____

4. Does the graph cross the x-axis? _____   where? _____

5. Does the graph cross the y-axis? _____   where? _____

6. Does the graph have symmetry? _____   If so, draw in the line of symmetry.

7. Could you plug in more x-values other than the ones given in the table
    and still be able to find an answer? _____

8. If we plugged in more x-values, what would happen to the y-values we would get? _____

<u>VOCABULARY:</u>
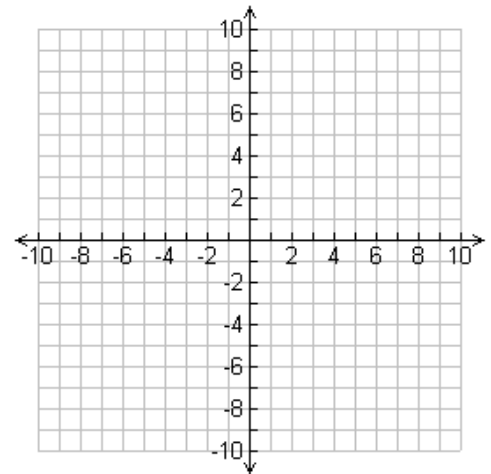
Quadratic Function - _____

Vertex - _____

Roots or Zeros - _____

Axis of Symmetry - _____

Graph each quadratic function below on your calculator. Sketch the graph and then answer each question.

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

Is this a function? _____ Does the graph open up or down? _____

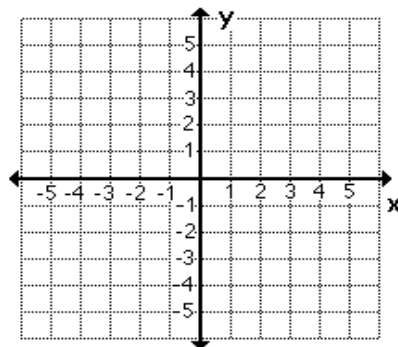What point is the **vertex**? _____ Is this point a maximum or a minimum? _____

What are the **roots** or **zeros** of the function? _____ (where does the function cross the x-axis?)

What is the **y-intercept**? _____

Draw in the **axis of symmetry** and then state its equation here: _____

Find the **domain** _____ and **range** _____ of the function.

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

Is this a function? _____ Does the graph open up or down? _____

What point is the **vertex**? _____ Is this point a maximum or a minimum? _____

What are the **roots** or **zeros** of the function? _____ (where does the function cross the x-axis?)
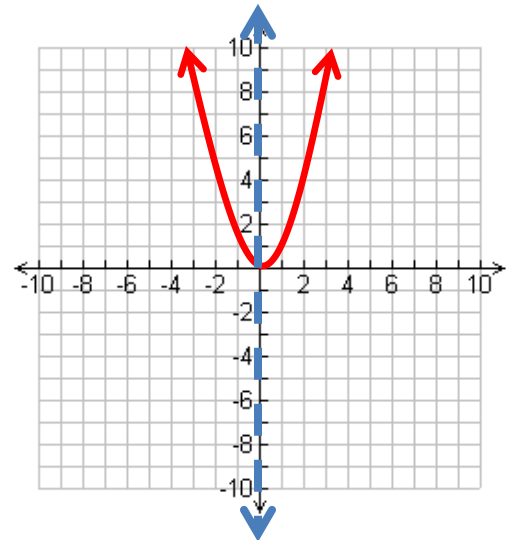
What is the **y-intercept**? _____

Draw in the **axis of symmetry** and then give its equation here: _____

Find the **domain** _____ and **range** _____ of the function.

Algebra 1   Name_____Key_____
Intro to Quadratic Functions   Notes

Given the following equation, fill in the table of values. Then plot the points on the graph.

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

$$y = x^2$$

Answer the following questions about your table or graph:

1. Is your graph a function? _____yes_____   Is your graph linear?_____no_____

   Describe the shape of the graph:_____U - shaped_____

2. Looking at the table, is there a constant rate of change in the x-values?_____yes_____

   Is there a constant rate of change in the y-values?_____no_____

3. Does the graph seem to have a maximum or minimum point? ___min_____   where? ___(0, 0)_____

4. Does the graph cross the x-axis? _____yes_____   where? _____(0, 0)_____

5. Does the graph cross the y-axis? ___yes_____   where? _____(0, 0)_____

6. Does the graph have symmetry? _____yes_____ If so, draw in the line of symmetry.

7. Could you plug in more x-values other than the ones given in the table   Domain: all real numbers
   and still be able to find an answer? _____yes_____

8. If we plugged in more x-values, what would happen to the y-values we would get? they would continue to get larger

                                                                          Range: y ≥ 0

VOCABULARY:
Quadratic Function - __A function whose graph is a parabola_____

Vertex - __the maximum or minimum point of a quadratic function_____

Roots or Zeros - ___where the graph crosses/touches the x-axis_____

Axis of Symmetry - __an imaginary vertical line that divides the parabola in half_____

Graph each quadratic function below on your calculator. Sketch the graph and then answer each question.

1. $y = 2x^2 - 8$
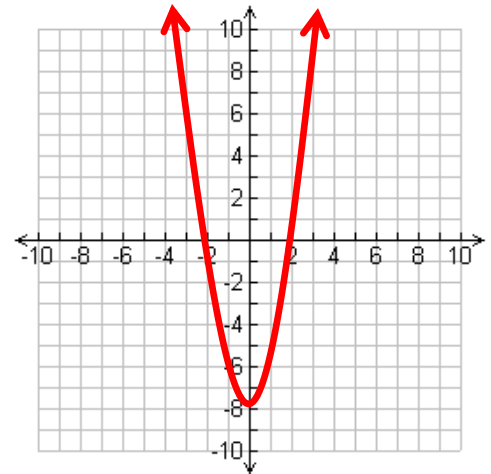
Is this a function? ___yes_____ Does the graph open up or down? ___up_____

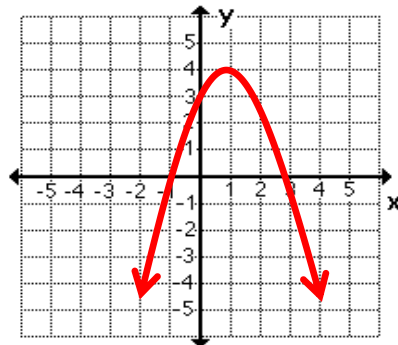What point is the **vertex**? __(0, -8)_____ Is this point a maximum or a minimum? ____min_____

What are the **roots** or **zeros** of the function? __(2, 0) & (-2, 0)___ (where does the function cross the x-axis?)

What is the **y-intercept**? ___(0, -8)_____

Draw in the **axis of symmetry** and then state its equation here:_____x = 0_____

Find the **domain** __all real numbers_____ and **range** _____y ≥ -8_____ of the function.

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

Is this a function? ___yes_____ Does the graph open up or down? ___down_____

What point is the **vertex**? __(1, 4)_____ Is this point a maximum or a minimum? ___max_____

What are the **roots** or **zeros** of the function? __(3, 0) & (-1, 0)__ (where does the function cross the x-axis?)

What is the **y-intercept**? ____(0, 3)_____

Draw in the **axis of symmetry** and then give its equation here:_____x = 1_____

Find the **domain**___all real numbers_____ and **range** _____y ≤ 4_____ of the function.

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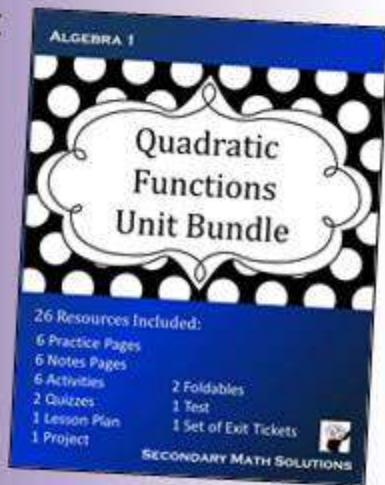
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