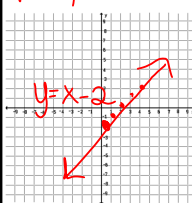


Lesson 8.6- SWBAT list key components and graph a quadratic function.

Kick off:

1) Graph each of the following (using any method)
 $-x = -2$
 $-1x \quad 1x$
 $y = x - 2$
 $m = \frac{1}{1} \quad b = -2$



2) Complete the square:
 $x^2 - 14x = 0$
 $x^2 - 14x + 49 = 49$
 $(x - 7)^2 = 49$
 $\sqrt{(x - 7)^2} = \sqrt{49}$
 $x - 7 = \pm 8$
 $x - 7 = 8 \rightarrow x = 15$
 $x - 7 = -8 \rightarrow x = -1$

Quadratic Functions

Quadratic functions form a shape of a parabola.

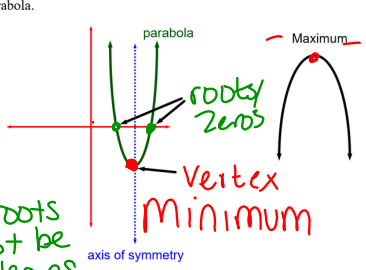
-They have an axis of symmetry that cut the parabola in half.

-The vertex is the turning point that exists on the axis of symmetry. The vertex creates a minimum or maximum.

-The quadratic function crosses the x-axis at the roots. This is when $y = 0$.

-The formula for the equation is:
 $y = ax^2 + bx + c$

*roots must be written as points!



Graphing Quadratic Functions

Step 1: Solve for y

Step 2: Find the axis of symmetry $x = -\frac{b}{2a}$

Step 3: Create the table to plot order pairs (from axis of symmetry; 2 above and 2 below)

Step 4: Plot and connect the points. LABEL the graph with the equation!

Directions: For each of the following, graph the quadratic function and label the axis of symmetry, vertex, roots and the minimum/maximum.

1) $y = x^2 - 2x + 3$
 Axis of Symmetry: $x = 1$
 Table:

x	y
-1	4
0	3
1	2
2	3
3	6

Graph: $x = 1$ (Axis of Symm.), Vertex: (1, 2), Roots: (-1, 0) and (3, 0)

2) $y = 2x^2 - 4x$
 Axis of Symmetry: $x = 1$

Table:

x	y
0	0
1	-2
2	0

Graph: Vertex (1, -2)

Lesson 8.5 Questions

Directions: Graph each quadratic function, label the vertex, roots and state the minimum or maximum.

1) Graph $y = 3x^2 - 6x + 5$
 Axis of Symmetry: $x = 1$
 Table:

x	y
0	5
1	2
2	5

Graph: Vertex (1, 2), Roots: (0, 0) and (2, 0)

2) Graph $y = -x^2 - 4x + 5$
 Axis of Symmetry: $x = -2$
 Table:

x	y
-5	0
-4	3
-3	4
-2	3
-1	0

Graph: Vertex (-2, 4), Roots: (-5, 0) and (-1, 0)

3) Graph $y = -x^2 + 6x - 7$
 Axis of Symmetry: _____ Table: _____ Graph: _____

4) Graph $y = x^2 + 2x - 1$
 Axis of Symmetry: _____ Table: _____ Graph: _____

$X = \frac{-b}{2a}$
 $X = \frac{-2}{2(1)}$
 $X = -1$

5) Graph $y = x^2 + 4x + 3$
 Axis of Symmetry: _____ Table: _____ Graph: _____

$X = \frac{-b}{2a}$
 $X = \frac{-4}{2(1)}$
 $X = -2$

6) Graph $y = -x^2 - 2x$
 Axis of Symmetry: _____ Table: _____ Graph: _____

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

Exit Ticket

Graph the quadratic function and label the vertex, and roots. State if the vertex has a minimum or maximum.