Math Study Strategies

Graphing Quadratic Equations

Follow the steps below to graph an equation in standard form $y = ax^2 + bx + c$.

1) Form a table like the one shown to the right, with one column for x and another for y.

x	y

2) Choose a convenient value for x (0 is commonly used), write it in the first column, and substitute it in the equation to find the corresponding value of y. Write the y value in the second column.

x	y
0	?

3) Repeat step 2 and find several more (x, y) values

x	y
0	?
1	?
2	?
4	?
-1	?
-2	?
-4	?

4) Plot the ordered pairs (corresponding x, y values) from the table on the graph and connect the points with a smooth curve. The curve for a quadratic equation is called a parabola. When "a" in the standard equation $y = ax^2 + bx + c$ is **positive**, the parabola will open **upward** on the graph. When "a" is **negative**, the parabola will open **downward**.

Example

Graph the equation $y = -x^2 + 2x + 6$

Step 1

x	y

Steps 2 and 3

If we choose "1" for x, then the corresponding y value will be:

$y = -x^2 + 2x + 6$

$y = -(1)^2 + 2(1) + 6$

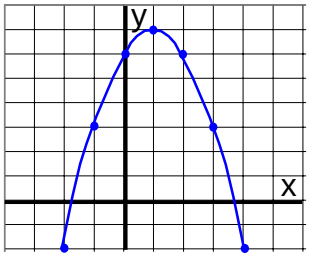
$y = -1 + 2 + 6 = 7$

Using the same procedure, more points can be found

x	y
-2	-2
-1	3
0	6
1	7
2	6
3	3
4	-2

Step 4

Because "a" is negative, the parabola will open downwards.



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