Graphing Quadratics – Standard Form Day 1

Quadratic Form: $y = Ax^2 + Bx + C$

'a' makes the graph move, neg. 'a' opens down and pos. 'a' opens up.

Squared makes it graph as parabola named a parabolic function.

'c' Shifts the graph a number of units.

'A of S' means Axis of Symmetry.

To find the vertex you must use the formula:

A of S $= x = \frac{-b}{2a}$

Which is now the x in the vertex (x,y).

Plugin "x" value toget "y"

To find the y-intercept we find the value of C.

Steps to Graph a Quadratic in Std Form

1. Find AofS
2. Use "x" and plug in to quadratic to find y → vertex (x,y)
3. Plot both
4. Choose two x-values to use to find points.
5. Plot

Ex1. $y = x^2 + 6x + 6$

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

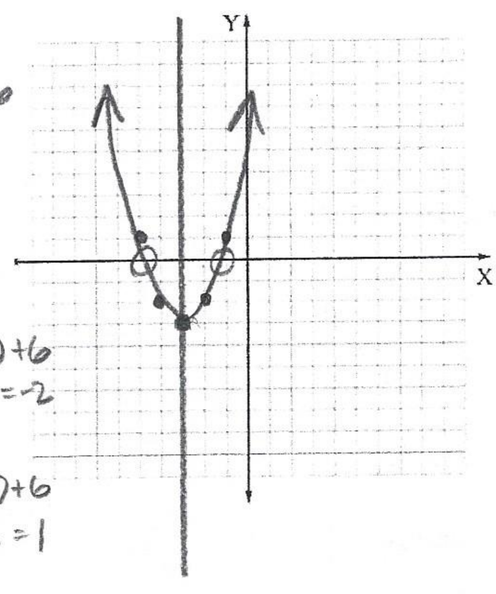
$x = -3$

$(-3)^2 + 6(-3) + 6$

$9 - 18 + 6 = -3$

Vertex	(-3,-3)
Max/Min Value	min = -3 @ x = -3
AOS	x = -3
Zero(s)	x = -1, x = -5
Opens	up
y-intercept	(0,6)
Domain	$(-\infty, \infty)$
Range	$[-3, \infty)$

x	y
-2	$(-2)^2 + 6(-2) + 6$ $4 - 12 + 6 = -2$
-1	$(-1)^2 + 6(-1) + 6$ $1 - 6 + 6 = 1$



Ex. 2) $y = 2x^2 - 12x + 17$

Vertex	(3,-1)
Max/Min Value	min=-1 @ x=3
AOS	x=3
Zero(s)	x=2.5, x=3.5
Opens	up
y-intercept	(0,17)
Domain	$(-\infty, \infty)$
Range	$[-1, \infty)$

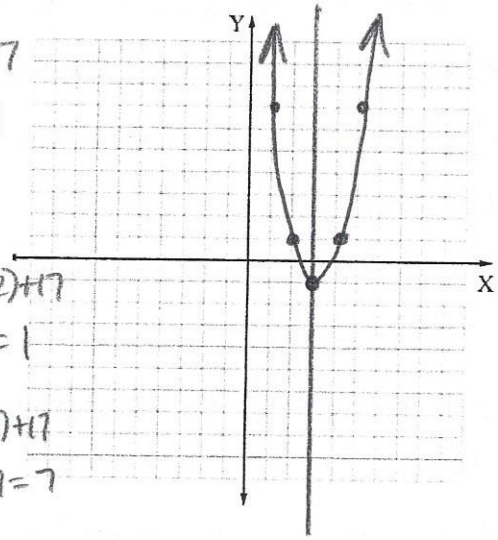
$x = \frac{12}{2(2)} = \frac{12}{4} = 3$

$x = 3$

$2(3)^2 - 12(3) + 17$

$18 - 36 + 17 = -1$

x	y
2	$2(2)^2 - 12(2) + 17$ $8 - 24 + 17 = 1$
1	$2(1)^2 - 12(1) + 17$ $2 - 12 + 17 = 7$



Ex 3) $y = \frac{1}{2}x^2 - 2x + 6$

Vertex	(2,4)
Max/Min Value	min=4 @ x=2
AOS	x=2
Zero(s)	No Solution
Opens	up
y-intercept	(0,6)
Domain	$(-\infty, \infty)$
Range	$[4, \infty)$

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

$x = 2$

$\frac{1}{2}(2)^2 - 2(2) + 6$

$2 - 4 + 6 = 4$

x	y
1	$\frac{1}{2}(1)^2 - 2(1) + 6$ $.5 - 2 + 6 = 4.5$
0	6