

Standard Form

$$f(x) = ax^2 + bx + c$$

**Leading Coefficient**

\* If (+): graph opens up

\* If (-): graph opens down

**Constant**

If you substitute 0 in for x, this will tell you where the graph will cross the y-axis.. This is called the y-intercept.

Example 1.  $f(x) = -8 + 2x + x^2$

Standard Form:  $x^2 + 2x - 8$  x-int

a = 1 b = 2 c = -8

Does it open up or down? up

y-intercept: (0, -8)

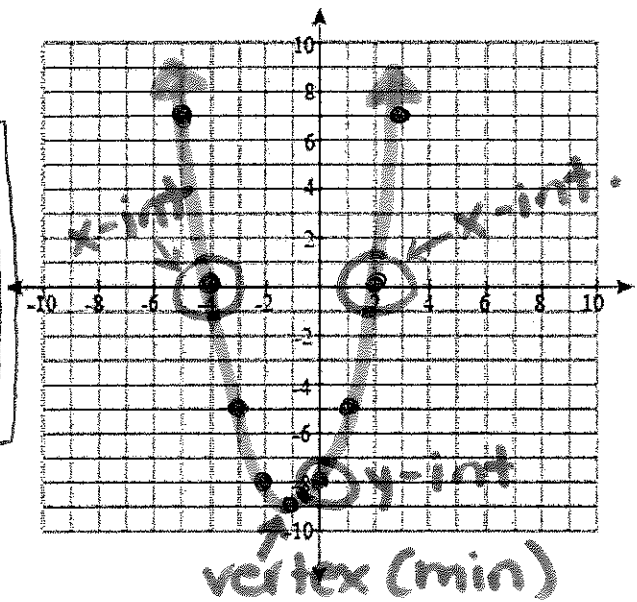
x-intercept(s): (-4, 0) & (2, 0)

Vertex: (-1, -9) x-int

Axis of Symmetry: x = -1

Domain:  $(-\infty, \infty)$  Range:  $[-9, \infty)$

x	y
-4	0
-3	-5
-2	-8
-1	-9
0	-8
1	-5
2	0



Example 2:  $f(x) = -12x - 2x^2 - 10$

Standard Form:  $-2x^2 - 12x - 10$

a = -2 b = -12 c = -10

Does it open up or down? down

y-intercept: (0, -10)

x-intercept(s): (-5, 0) & (-1, 0)

Vertex: (-3, 8)

Axis of Symmetry: x = -3

Domain:  $(-\infty, \infty)$  Range:  $(-\infty, 8]$

x	y
-6	-10
-5	0
-4	6
-3	8
-2	6
-1	0
0	-10

