

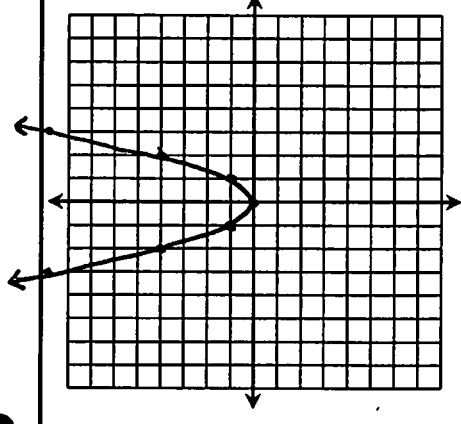
QUADRATIC FUNCTIONS

PARENT FUNCTION:

$$f(x) = x^2$$

- Creates a U-shape curve called a parabola.
- The axis of symmetry is a vertical line that divides the parabola into two equal parts.
- The turning point is called the vertex.

x	f(x)
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9



STANDARD FORM:

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

Axis of Symmetry: $x = \frac{-b}{2a}$

Plug back in to find the vertex!

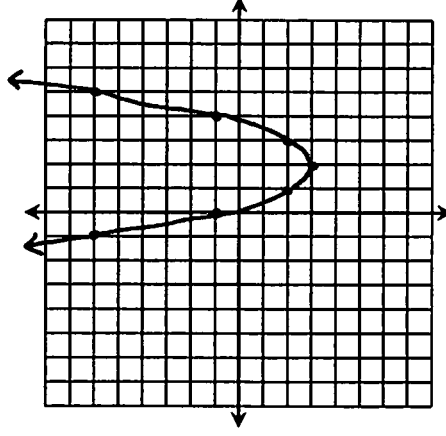
EXAMPLE: $y = x^2 - 4x + 1$

$$x = \frac{4}{2(1)} = 2$$

$$y = 2^2 - 4(2) + 1 = 4 - 8 + 1 = -3$$

$$V: (2, -3)$$

x	f(x)
-1	6
0	1
1	-2
2	-3
3	-2
4	1
5	6



VERTEX FORM:

$$f(x) = a(x-h)^2 + k$$

Axis of Symmetry: $x = h$

Vertex: (h, k)

EXAMPLE: $y = -2(x+1)^2 + 6$

x	f(x)
-4	-12
-3	-2
-2	4
-1	6
0	4
1	-2
2	-12

