

4.1 Graphing Quadratic Functions

When the degree is 2
degree highest exponent of x is 2

Standard Form

$$y = ax^2 + bx + c$$

What does the graph of
a quadratic look like

Parabola



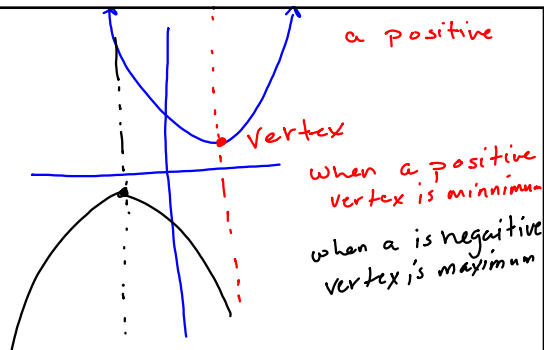
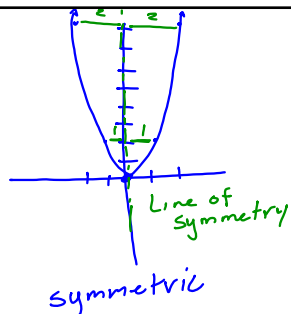
a is it $+/-$

If a is $+$ opens up

If a is $-$ opens down

$$y = 2x^2$$

X	Y
2	8
1	2
0	0
-1	2
-2	8



The line of symmetry
goes through the vertex

Equation for line of symmetry

In standard form
 $y = ax^2 + bx + c$

The equation is

$$x = -\frac{b}{2a}$$

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

$$x = -\frac{-6}{2(2)} = \frac{6}{4} = \frac{3}{2} = 1.5$$

Line of symmetry $x = \frac{3}{2}$

Use line of symmetry to find vertex

$$y = 2\left(\frac{3}{2}\right)^2 - 6\left(\frac{3}{2}\right) + 2$$

$$y = \frac{18}{4} - \frac{36}{4} + \frac{8}{4} = \frac{10}{4} = \frac{5}{2} = 2.5$$

$$(1.5, 2.5)$$

$$y = ax^2 + bx + c \leftarrow$$

think about
 $y = mx + b \leftarrow$

$$C = y\text{-int}$$
$$y = 2x^2 - 6x + 2$$
$$y\text{-int} = 2$$
$$(0, 2)$$

Two graphs
ask for estimates
of x intercepts

