

QUADRATIC FUNCTIONS

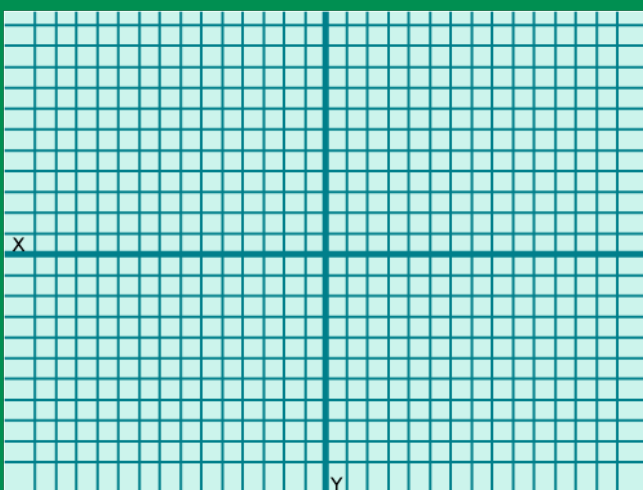
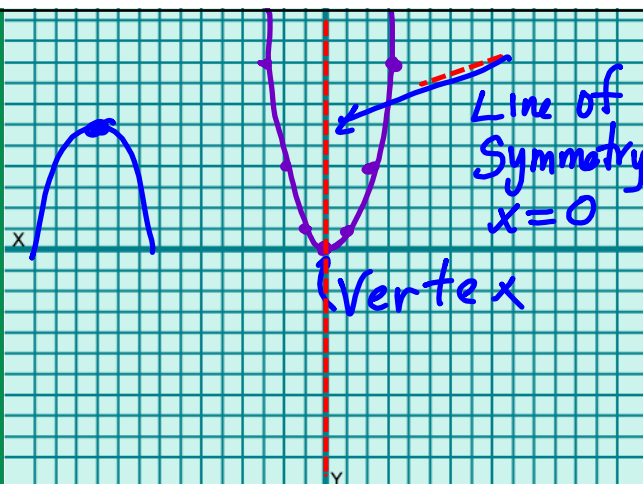
$$y = ax^2 + bx + c$$

Standard form

$$y = x^2$$

parabola

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



Vertex Form

$$y = a(x-h)^2 + K$$

Vertex: (h, K)

line of symm: $x = h$

direction: $+a$ upward
 $-a$ downward

width: $|a| > 1$ narrow
 $|a| = 1$ normal
 $0 < |a| < 1$ wide

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

left 4

down 1

Vertex:
(-4, -1)

0	0
1	1
2	4
3	9



$$y = -\frac{1}{2}(x-3)^2 - 4$$

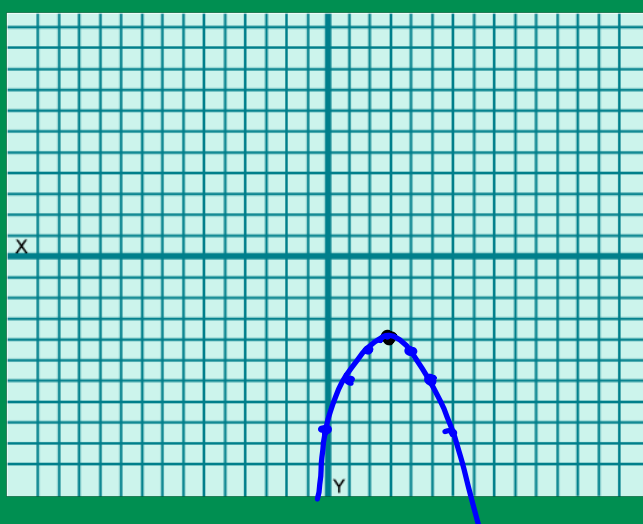
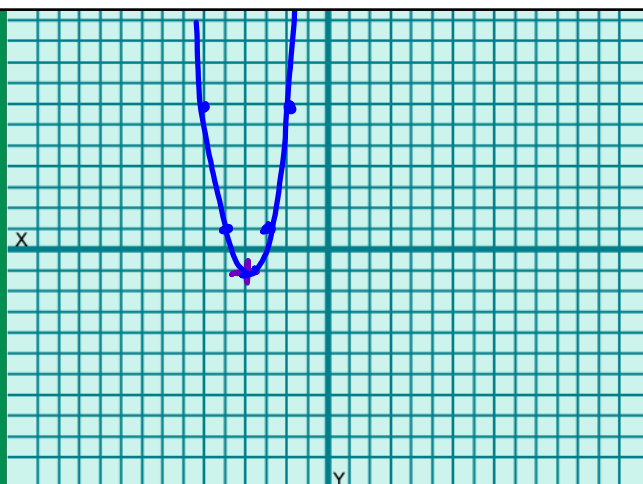
Vertex: (3, -4)

Direction: downward

Line of symm: $x=3$

Width: Wide

0	0
1	$\frac{1}{2}$
2	2
3	$\frac{9}{2}$



$$y = -15(x - 81)^2 + 92$$

Vertex: (81, 92)

line of symm: $x = 81$

direction: down

Width: narrow

$$y = \frac{2}{3}x^2 - 5$$

$$\frac{2}{3}(x - 0)^2 - 5$$

Vertex (0, -5)

Line of symm: $x = 0$

direction: up ($+2/3$)

Width: Wide

$$y < -\frac{1}{4}(x+6)^2 + 5$$

\uparrow \uparrow
 left 6 up 5

0	0
-1	+ -1
2	+ 2
3	+ 3

-2.25

