Summary — The Family of Quadratic Functions

Vertical Stretch or Shrink, and/or Reflection in x-axis

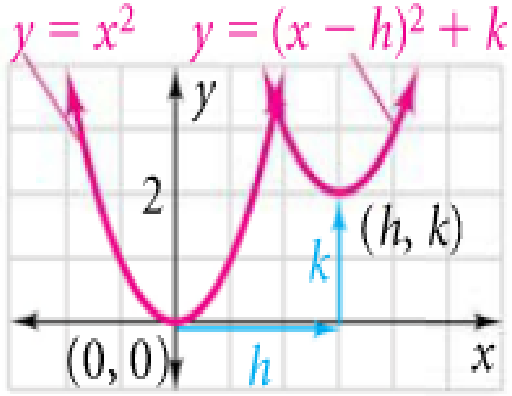
Parent function:	$y = x^2$
Reflection in x-axis:	$y = -x^2$
Stretch ($a > 1$) or shrink ($0 < a < 1$) by factor a:	$y = ax^2$
Reflection in x-axis:	$y = -ax^2$

Vertex Form

$$\boldsymbol{y = a(x - h)^2 + k}$$

The graph (and vertex) of $y = ax^2$ shifts h units horizontally and k units vertically.

For $h > 0$, the graph shifts right.
For $h < 0$, the graph shifts left.
For $k > 0$, the graph shifts up.
For $k < 0$, the graph shifts down.



The vertex is (h, k), and the axis of symmetry is the line $x = h$.