

Quadratics

3 Forms

- Opens up if a is positive
- Opens down if a is negative

Standard Form

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

To Find the Vertex:

1. $x = \frac{-b}{2a}$
 - This is the axis of symmetry and the x-coordinate of the vertex
2. Take that x-value and plug it back in to the original equation to get the y-value of the vertex
3. $V: (x, y)$

Find 2 Other Points:

1. Add and subtract 1 from the x-value of the vertex
2. Plug them into the original equation to find the y-values
3. Plot 2 other points (should be symmetric)
4. Draw parabola and done!

Vertex Form

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

To Find the Vertex (no work!):

1. $V: (h, k)$
 - Switch h 's sign, leave k the same

Find 2 Other Points

- Same directions as Standard Form

Intercept Form

$$y = a(x - p)(x - q)$$

To Find the Vertex:

1. $x = \frac{p+q}{2}$ (switch sign on p & q)
 - This is the axis of symmetry and the x-coordinate of the vertex
2. Take that x-value and plug it back in to the original equation to get the y-value of the vertex
3. $V: (x, y)$

Find 2 Other Points (no work!):

1. p & q (switch sign on both) are the x-intercepts (where the graph hits the x-axis)
2. Plot these 2 points as $(p, 0)$ and $(q, 0)$ right on the x-axis and you have your 3 total points
3. Draw parabola and done