

Unit 5 - The Great Quadratic - Graphing Quadratic Equations

The graph of a quadratic equation is called a parabola.

A parabola has a maximum or minimum point called a vertex.

There are three forms of a quadratic equation:

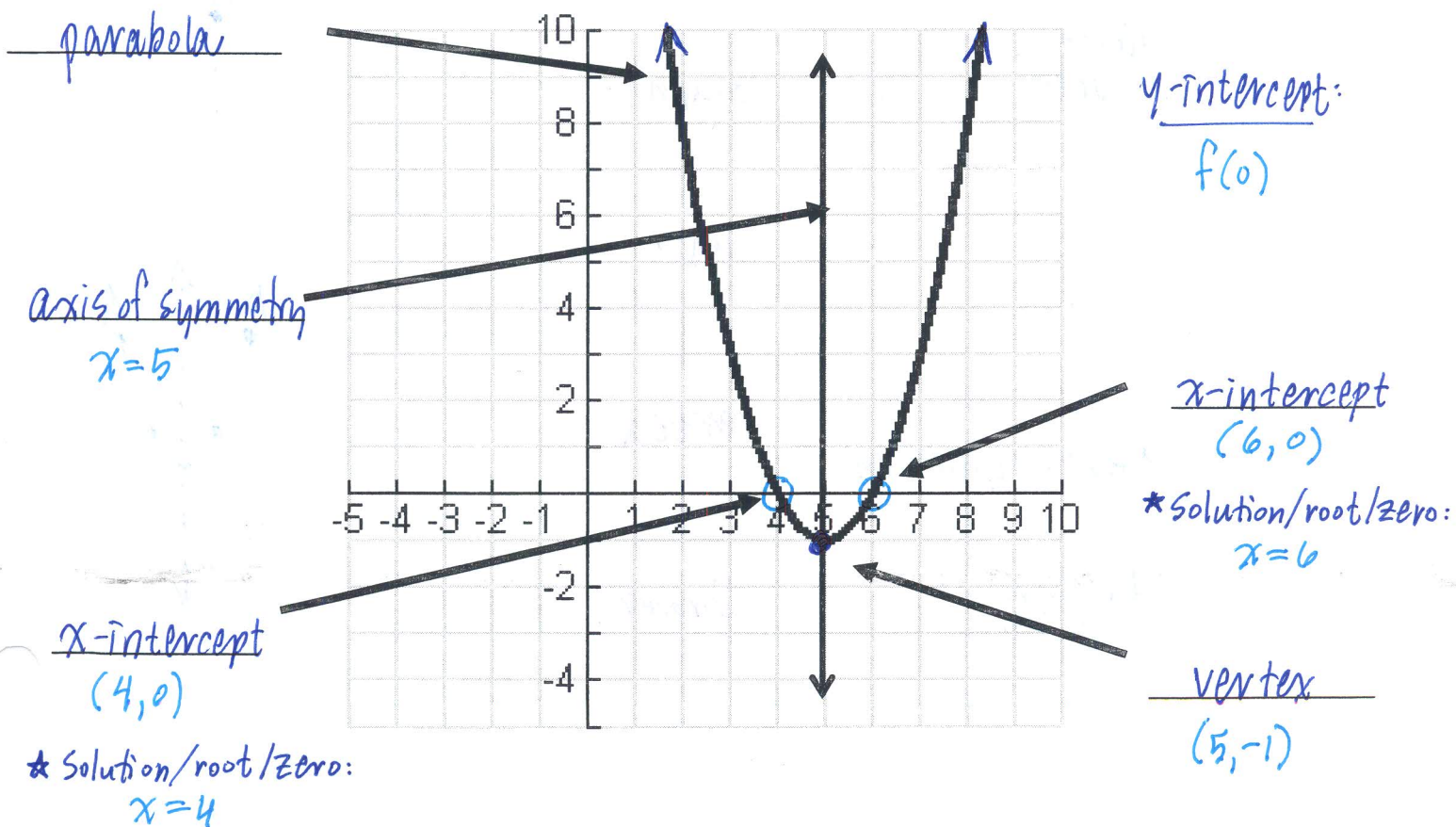
I. Intercept Form $f(x) = a(x-p)(x-q)$ ← factored

II. Vertex Form $f(x) = a(x-h)^2 + k$ ← graph using transformations

III. Standard Form $f(x) = ax^2 + bx + c$ ← polynomial

The equation $x = \frac{-b}{2a}$ gives the equation of the Axis of Symmetry.

This is a vertical line.



Graphing:

Steps:

Example: vertex:

$$y = -(0.5 - 2)(0.5 + 1)$$

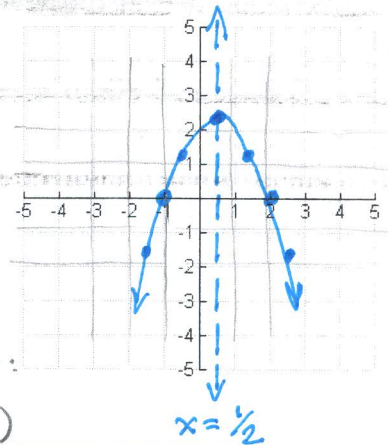
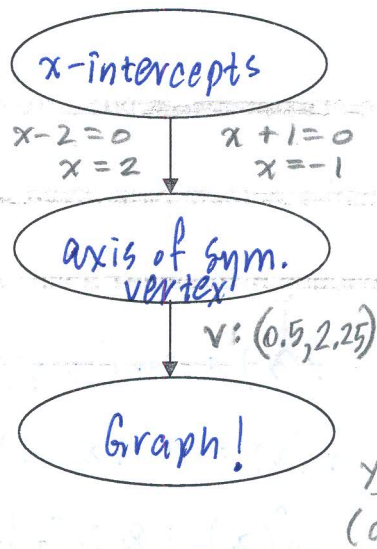
Graph $y = -(x - 2)(x + 1)$

I. Intercept Form

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

p and q are the x -intercepts.

a determines the direction and width.

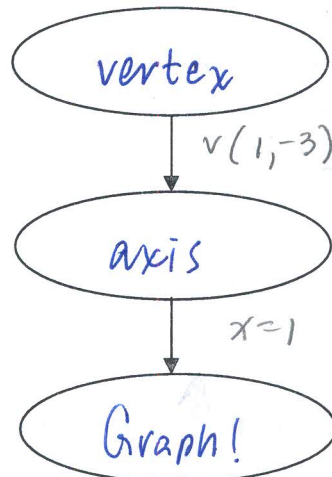


II. Vertex Form

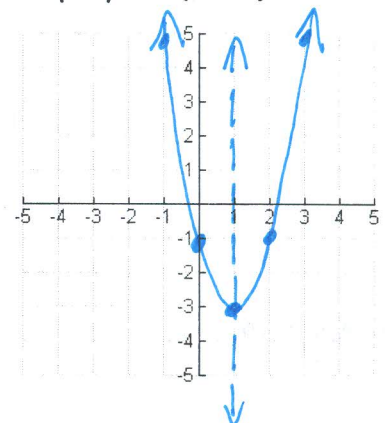
$$y = a(x - h)^2 + k$$

(h, k) is the vertex.

a determines the direction and width.



Graph $y = 2(x - 1)^2 - 3$

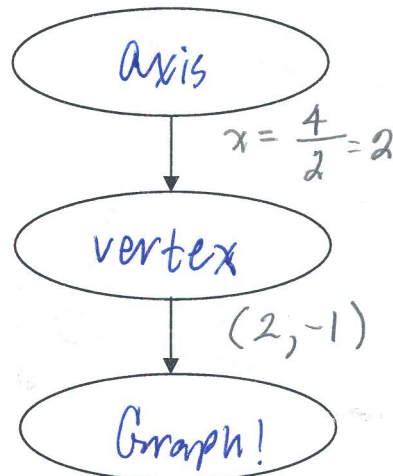


III. Standard Form

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

$x = \frac{-b}{2a}$ gives the axis of symmetry.

a determines the direction and width.



Graph $y = x^2 - 4x + 3$

