

Study Guide

Solving Quadratic Equations by Graphing 03/22/2012

Solve Quadratic Equations by Graphing

A quadratic equation is a function that contains polynomial expressions for which the highest power of the unknown variable is two.

Quadratic functions are written in the form:

$$y = ax^2 + bx + c \text{ or } f(x) = ax^2 + bx + c$$

$f(x)$ is read "f of x."

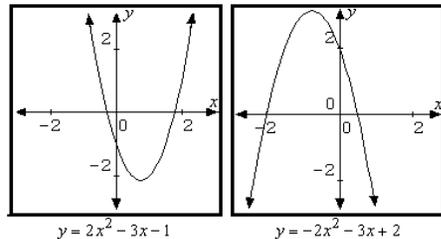
Below are a few examples of quadratic functions:

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

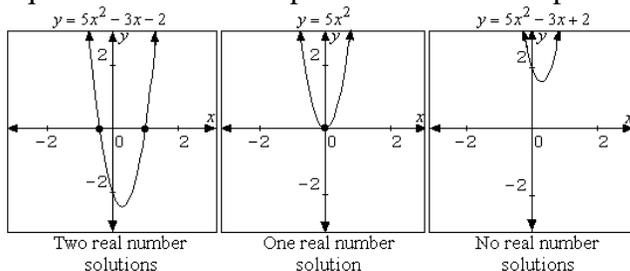
$$g(x) = -2x^2 + 6$$

$$f(x) = 5x^2 - 2x$$

Graphs of quadratic functions are always in the shape of a parabola. Parabolas can open up or open down. Examples of each are shown below.

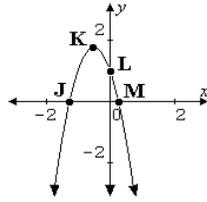


Factoring, using the quadratic formula, and graphing are the three main methods for solving quadratic equations. This skill focuses on solving quadratic equations by graphing. To solve quadratic equations, it is necessary to find the values for x in which y equals zero. These values occur at the x -intercept(s), or the point(s) where the graph crosses the x -axis. The x -intercepts are of the form $(x, 0)$, where the y -value equals zero. X -intercepts can occur at two points, one point, or no points.



Example 1:

The following graph represents the equation $y = -3x^2 - 3x + 1$. Choose the point(s) on the graph that would solve the equation $-3x^2 - 3x + 1 = 0$.



Solution:

The x -intercepts are the solutions to the quadratic equation. Therefore, points J and M would solve $-3x^2 - 3x + 1 = 0$.

Answer: Points J and M.