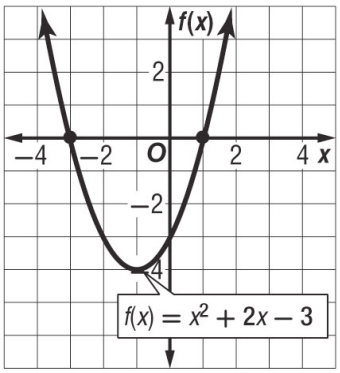
# 4.2 Day 1 Notes

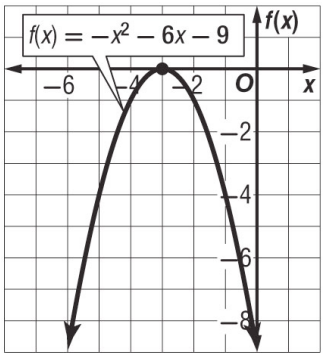
**Objectives:**

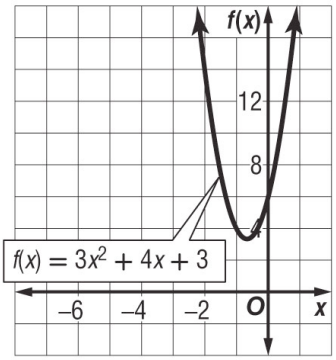
- Identify Solutions to Quadratic Functions
- Solve Quadratic Functions by Graphing
- Solve Quadratic Functions from Tables

The solutions of a quadratic equation are called the roots of the equation. One method for finding the roots of a quadratic equation is to find the zeros of the related quadratic function. The zeros of the function are the x-intercepts of its graph.

**Identify the solutions of the following quadratic functions:**




**Graph the following quadratic function and find the solution(s) form the graph:**

**1)** $f(x) = x^2 - 8x + 12$

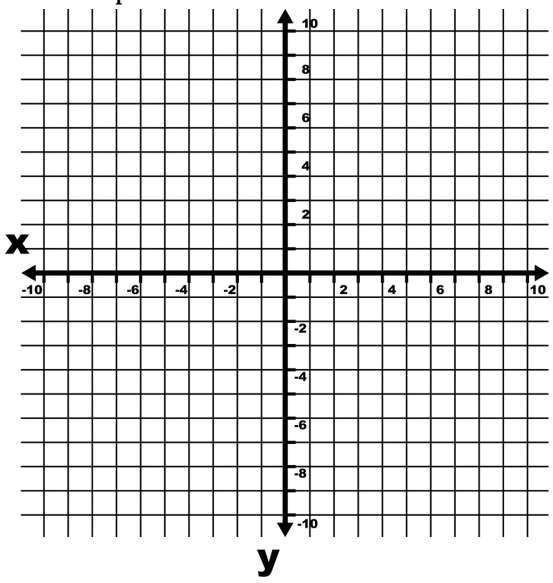
Find the axis of symmetry:

Find the vertex:

Name the y-intercept:

Identify the solutions:

Graph the function:



**2)** $f(x) = x^2 + 2x - 15$

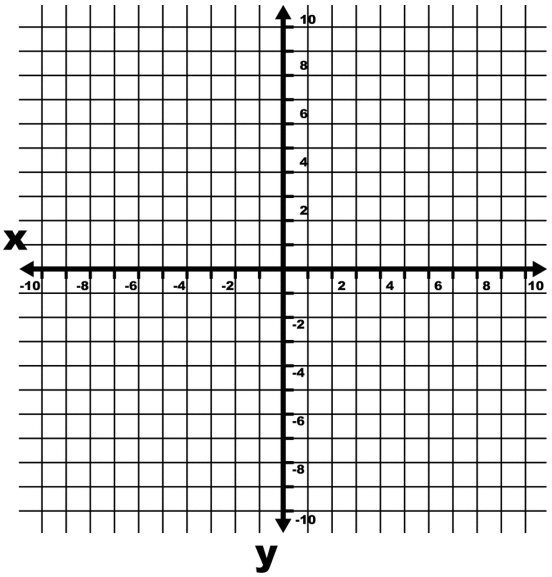
Find the axis of symmetry:

Find the vertex:

Name the y-intercept:

Identify the solutions:

Graph the function:




Often exact roots cannot be found by graphing. You can estimate the solutions by stating the integers between which the roots are located.

When the y value of the function is _____
then there is at least one zero between _____.

**3)** Use the tables to determine the location of the zeros of each quadratic function.

| $x$ | −7 | −6 | −5 | −4 | −3 | −2 | −1 | 0 |
|---|---|---|---|---|---|---|---|---|
| $f(x)$ | −8 | −1 | 4 | 4 | −1 | −8 | −22 | −48 |

| $x$ | −6 | −3 | 0 | 3 | 6 | 9 | 12 | 15 |
|---|---|---|---|---|---|---|---|---|
| $f(x)$ | −6 | −1 | 3 | 5 | 3 | −1 | −6 | −14 |

**4)** Solve $x^2 - 6x = -4$ by looking at the table in the calculator. If exact roots cannot be found, state the consecutive integers between which the roots are located.

| x | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| f(x) | | | | | | | |