4.1 Graphical Solutions of Quadratic Equations

Quadratic Equation:

-a polynomial with degree two in the form

$ax^2 + bx + c = 0$ $(a \neq 0)$

Root(s) of an Equation:

-the solution(s) to an equation

Zero(s)/x-intercept of a function (when $f(x)$ or $y = 0$)

-the values of x where a quadratic function, $(x) = ax^2 + bx + c$, has a value of $f(x) = 0$

For example:

Solving the equation $0 = 3x + 6$ will determine the roots of an equation

- ➔ The root of the equation is $x = -2$

Finding the zero(s)/x-intercept of $f(x) = 3x + 6$

- ➔ The zero or x-intercept of $f(x)$ is at $x = -2$

Solving quadratics / Finding zeros (or x-intercepts) with Graphing Calculator:

To solve a quadratic, set one side of the equation equal to zero and plug the expression into the calculator.

Use 2nd trace => 2: zero and following the steps to find the zeros

Example 1: Solve

a.) $-x^2 + 8x - 16 = 0$

b.) $x^2 + 10x = -12$

c.) $100 + 15x - x^2 = 0$

d.) $600 = 6x^2$

e.) $3x^2 - x = -2$

f.) $0.0025(x - 100)^2 - 12$