Chapter 4 Section 1: Solving Quadratic Equations

- The standard form of a quadratic equation in one variable is __________________________, where a, b, and c are real numbers and a≠0.
- A _____________ of an equation is a solution of the equation.

3 methods for solving a quadratic equation:

1. By graphing – find the x-intercepts by graphing the standard form.
2. Using square roots – write the equation in the form \( u^2 = d \), and solve by taking the square root of each side
3. By factoring – factor the equation and solve using the Zero-Product Property.

Solving Quadratic Equations by Graphing (don’t forget about desmos.com)

Example 1: Solve \( x^2 + 3x - 10 = 0 \) by graphing.

Example 2: Solve \( 2x^2 + 18 = 12x \) by graphing.
Solving using Square Roots

**Example 3**: Solve $2x^2 + 14 = 70$ using square roots.

**Example 4**: Solve $4x^2 + 20 = 16$ using square roots.

**Example 5**: Solve $\frac{3}{4}(x + 1)^2 = 10$ using square roots.
Solving by Factoring

Zero Product Property: If the product of two expressions is zero, then one or both of the expressions equal zero.

**Example 6**: Solve $x^2 + 2x = 48$ by factoring.

**Example 7**: Find the zeros of $f(x) = 4x^2 - 13x + 3$