**Quadratic** (2nd degree polynomial)

**Quadratic Equation:** *ax*2 + *bx* + *c* = 0, *a* ≠ 0, where *a*, *b*, and *c* are real numbers.

**Quadratic Function:**  *f* (*x*) = *ax*2 + *bx* + *c*, *a* ≠ 0, where *a*, *b*, and *c* are real numbers.

Both can have real-number or imaginary-number solutions.

***Zeros:*** *Solutions* of *ax*2 + *bx* + *c* = 0.

**Square-Root Method: Always produces two solutions:**

 *If x2 = k, then x =* $\sqrt{k}$ *or x =* $-\sqrt{k}$

**Example 1:** Solve $x^{2}-16=0$

**Example 2:** Solve $x^{2}+72=0$

**Example 3:** Solve *2x2 − 10 = 0*

**Example 4:** Solve *(x - 5)2= 24*

**Example 5**: 3(7m + 2)2 + 4 = 40

**Example 6**: $\frac{1}{2}x^{2}+4=24$

**Example 7**: $3x^{2}+6=70$ (hint: rationalize denominator)

**Example 8**: $3\left(x-3\right)^{2}=54$

**Example 9**: $\left(x-\frac{1}{3}\right)^{2}=\frac{5}{9}$

**Example 10**: $\left(2x-3\right)^{2}=-12$

**Example 11**: $4n^{2}+4n+1=16$ (hint: perfect square trinomial)

**Example 12**: $9m^{2}-12m+4=25$ (hint: perfect square trinomial)