

1.3: Solve Quadratic Equations

- only for quadratic equations (highest variable is x^2)

- Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

- EX 1) Solve: $3x^2 + 4x - 3 = 12$

Step 1: make equation equal zero

$$3x^2 + 4x - 3 = \cancel{12} \quad \cancel{-12}$$

$$3x^2 + 4x - 15 = 0$$

Step 2: Identify a, b, & c

$$a: 3 \quad b: 4 \quad c: -15$$

Step 3: put numbers for a, b, & c into formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-4) \pm \sqrt{(4)^2 - 4(3)(-15)}}{2(3)}$$

$$x = \frac{-4 \pm \sqrt{196}}{6}$$

$$x = \frac{-4 \pm 14}{6}$$

$$x = \frac{-4 - 14}{6}$$

$$x = -3$$

$$x = \frac{-4 + 14}{6}$$

$$x = \frac{5}{3}$$

Ex 2) Solve: $x^2 + 8 = \cancel{5x}$
 $\quad \quad \quad -5x \quad \quad \quad \cancel{-5x}$

$$|x^2 - 5x + 8 = 0$$

$$a:1 \quad b:-5 \quad c:8$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(8)}}{2(1)}$$

$$x = \frac{5 \pm \sqrt{-7}}{2}$$

* we will learn how to keep going later!