

Aug 30

## Solve Quadratic Equations

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

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

(Ex1) Solve:  $3x^2 + 4x - 3 = 12$

Step 1: Make equation equal zero

$$\begin{array}{r} 3x^2 + 4x - 3 = 12 \\ \quad \quad \quad -12 \quad +12 \\ \hline 3x^2 + 4x - 15 = 0 \end{array}$$

Step 2: Identify a, b, and c.

a: 3    b: 4    c: -15

Step 3: Put numbers for a, b, and c into formula.

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

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

Step 4: Clean up formula.

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

\* We will learn how to go further next week.

Ex2 Solve:  $x^2 + 8 = 5x$

$$\begin{array}{r|l} -5x & 5x \\ \hline x^2 - 5x + 8 = 0 \end{array}$$

a: 1   b: -5   c: 8

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

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

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