

key



**QUADRATIC FORMULA**

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

The quadratic formula is used to find:

Examples:

$$x^2 + 3x = 4$$

1. Write in Standard Form (set equal to 0):
2. Identify A, B, & C:
3. Plug A, B, and C, into the Formula:
4. Simplify:

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

$$a=1 \quad b=3 \quad c=-4$$

$$x = \frac{-3 \pm \sqrt{(3)^2 + -4(1)(-4)}}{2(1)}$$

$$x = \frac{-3 \pm \sqrt{9 + 16}}{2}$$

$$x = \frac{-3 \pm \sqrt{25}}{2}$$

$$x = \frac{-3 \pm 5}{2}$$

$$\begin{aligned} x &= \frac{-3+5}{2} & \frac{-3-5}{2} \\ &= \frac{2}{2} & \frac{-8}{2} \\ &= 1 & = -4 \end{aligned}$$





$$x^2 = 5 - 4x$$

$$x^2 + 4x - 5 = 0$$

$$a=1 \quad b=4 \quad c=-5$$

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

$$x = \frac{-4 \pm \sqrt{16 + 20}}{2}$$

$$x = \frac{-4 \pm \sqrt{36}}{2}$$

$$x = \frac{-4 \pm 6}{2}$$

$$x = \frac{-4+6}{2} = \frac{2}{2} = \textcircled{1} \quad x = \frac{-4-6}{2} = \frac{-10}{2} = \textcircled{-5}$$

$$x^2 + 9x + 14 = 0$$

$$a=1 \quad b=9 \quad c=14$$

$$x = \frac{-9 \pm \sqrt{(9)^2 + -4(1)(14)}}{2(1)}$$

$$x = \frac{-9 \pm \sqrt{81 + -56}}{2}$$

$$x = \frac{-9 \pm \sqrt{25}}{2} \quad x = \frac{-9 \pm 5}{2}$$

$$x = \frac{-9+5}{2} = \frac{-4}{2} = \textcircled{-2} \quad x = \frac{-9-5}{2} = \frac{-14}{2} = \textcircled{-7}$$

$$2x^2 - 3x = 8$$

$$2x^2 - 3x - 8 = 0$$

$$a=2 \quad b=-3 \quad c=-8$$

$$x = \frac{3 \pm \sqrt{(-3)^2 + -4(2)(-8)}}{2(2)}$$

$$x = \frac{3 \pm \sqrt{9 + 64}}{4}$$

$$x = \frac{3 \pm \sqrt{73}}{4}$$

$$x^2 + x = 1$$

$$x^2 + x - 1 = 0$$

$$a=1 \quad b=1 \quad c=-1$$

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

$$x = \frac{-1 \pm \sqrt{1+4}}{2}$$

$$x = \frac{-1 \pm \sqrt{5}}{2}$$