

# C – 16      How to Solve a Quadratic Equation using the Quadratic Formula

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

**1<sup>st</sup> Step: Find a, b, & c values from the given quadratic equation  $ax^2 + bx + c$**

So, if you have the equation  $x^2 + 4x + 3$ , then  $a = 1$ ,  $b = 4$ , and  $c = 3$

**2<sup>nd</sup> Step: Plug the a, b, & c values into the quadratic formula**

So, if  $a = 1$ ,  $b = 4$ , and  $c = 3$  then,

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

**3<sup>rd</sup> Step: Solve (simplify) the formula twice.**

Once using + and then using -. Since you have a  $\pm$  sign.

$$\frac{-4 + \sqrt{16 - 12}}{2}$$

$$\frac{-4 - \sqrt{16 - 12}}{2}$$

$$\frac{-4 + 2}{2}$$

$$\frac{-4 - 2}{2}$$

**4<sup>th</sup> Step: Final answer.       $x = -1$       and       $x = -3$**