

Complex Roots of a Quadratic Equation

Standard form of a quad. eq. $ax^2+bx+c=0$
where a, b & c are real numbers and $a \neq 0$.

All quadratic equations can be solved by
using the quadratic formula.

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

Solve for x .

$$x^2 + 4x + 10 = 0$$

$$a=1 \quad b=4 \quad c=10$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-4 \pm \sqrt{4^2 - 4(1)(10)}}{2(1)}$$

$$x = \frac{-4 \pm \sqrt{-24}}{2} = \frac{-4 \pm 2i\sqrt{6}}{2} = \boxed{-2 \pm i\sqrt{6}}$$

Roots - the roots of a quadratic equation are the special x -values that, when plugged into the given quad. equation, make it equal zero.