

Solve Quadratics Using Square Root Method

Always Remember \pm when taking a sq. root in an eq.

You may use the sq. root

method to solve a quadratic eq. if the eq. can be written as...

$$ax^2 = c \text{ or}$$

$$a(x \#)^2 = c$$

↑
constant

Isolate x^2 or $()^2$ with inverse operations. Then take square root of each side.

$$1. \quad \begin{array}{r} 5x^2 - 180 = 0 \\ +180 \quad +180 \\ \hline 5x^2 = 180 \\ \frac{5x^2}{5} = \frac{180}{5} \\ \sqrt{x^2} = \pm\sqrt{36} \\ x = \pm 6 \end{array}$$

$$2. \quad \begin{array}{r} 3x^2 = -120 \\ \frac{3x^2}{3} = \frac{-120}{3} \\ \sqrt{x^2} = \pm\sqrt{-40} \\ x = \pm\sqrt{-40} \\ x = \pm\sqrt{4 \cdot -1 \cdot 10} \\ x = \pm 2i\sqrt{10} \end{array}$$

$$3. \quad \begin{array}{r} -5(x-4)^2 = 100 \\ \frac{-5(x-4)^2}{-5} = \frac{100}{-5} \\ \sqrt{(x-4)^2} = \pm\sqrt{-20} \\ x-4 = \pm\sqrt{-20} \\ x-4 = \pm 2i\sqrt{5} \\ +4 \quad +4 \\ \hline x = 4 \pm 2i\sqrt{5} \end{array}$$

$$4. \quad \begin{array}{r} (x+3)^2 - 2 = -9 \\ +2 \quad +2 \\ \hline \sqrt{(x+3)^2} = \pm\sqrt{-7} \\ x+3 = \pm i\sqrt{7} \\ -3 \quad -3 \\ \hline x = -3 \pm i\sqrt{7} \end{array}$$

$$4 + 2i\sqrt{5} + 4 - 2i\sqrt{5}$$