Solving Quadratic Equations using Square Roots:

1. Isolate the term that is being squared on one side of the equation.

2. Find the square roots of both sides.

3. Finish solving for x when necessary.

Find all real solutions. Round irrational answers to the nearest hundredth.

1. $8x^2 - 12 = 20$

$\frac{8}{8} \quad +12 \quad +12$

$\frac{32}{8}$

$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

Find all real solutions. Round irrational answers to the nearest hundredth.

$9x^2 - 3 = 46$

$+3 \quad +3$

$\frac{9x^2}{9} = \frac{49}{9}$

$\sqrt{x^2} = \sqrt{5.4}$

$x = 2.3\overline{-}$

$\sqrt{x^2} = \sqrt{\frac{49}{9}}$

$x = \pm \frac{7}{3}$

Find all real solutions. Round irrational answers to the nearest hundredth.

2. $7x^2 + 3 = 24$

$-3 \quad -3$

$\frac{7x^2}{7} = \frac{21}{7}$

$\sqrt{x^2} = \sqrt{3}$

± 1.73

Find all real solutions. Round irrational answers to the nearest hundredth.

3. $60 - 2x^2 = 10$

$-2x^2 + 60 = 10$

$-60 \quad -60$

$\frac{-2x^2}{-2} = \frac{-50}{-2}$

$\sqrt{x^2} = \sqrt{25}$

$x = \pm 5$

Find all real solutions. Round irrational answers to the nearest hundredth.

4. $14 - 3x^2 = 26$

$-14 \quad -14$

$\frac{-3x^2}{-3} = \frac{12}{-3}$

$\sqrt{x^2} = \sqrt{-4}$

No Real Solution

Find all real solutions. Simplify irrational answers.

5. $2x^2 - 11 = 89$

$+11 \quad +11$

$\frac{2x^2}{2} = \frac{100}{2}$

$\sqrt{x^2} = \sqrt{50}$

$25 \cdot 2$

$\pm 5\sqrt{2}$

Find all real solutions. Simplify irrational answers.

6. $1 + \frac{2}{3}x^2 = 37$

$-1 \quad -1$

$\frac{3}{2} \cdot \frac{2}{3}x^2 = 36 \cdot \frac{3}{2}$

$\frac{108}{2}$ $\sqrt{54} = \sqrt{x^2}$

$9 \quad 6$

$x = \pm 3\sqrt{6}$

Find all real solutions. Simplify irrational answers.

7. $(x-2)^2+3=19$

$-3 \quad -3$

$\sqrt{(x-2)^2} = \sqrt{16}$

$x-2 = \pm 4$

$+2 \quad +2$

$x = \begin{matrix} +4+2 \\ -4+2 \end{matrix}$

$x = -2, 6$

Find all real solutions. Simplify irrational answers.

8. $5(x+1)^2-11=9$

$+11 \quad +11$

$\frac{5(x+1)^2}{5} = \frac{20}{5}$

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

$x+1 = \pm 2$

$-1 \quad -1$

$x = \begin{matrix} +2-1 \\ -2-1 \end{matrix}$

$x = 1, -3$

Find all real solutions. Simplify irrational answers.

9. $2(x-3)^2+4=20$

$-4 \quad -4$

$\frac{2(x-3)^2}{2}=\frac{16}{2}$

$\sqrt{(x-3)^2}=\sqrt{8}$

$\pm$

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

$3\pm 2\sqrt{2}$