

9.4 Solving Quadratic Equations

Solving Equations Review...

$3x + 5 = 12$ $\begin{array}{r} -5 \\ \hline 3x = 7 \\ \hline x = \frac{7}{3} \end{array}$	$\frac{3}{4}x - 2 = 1$ $\begin{array}{r} +2 \\ \hline \frac{3}{4}x = 3 \\ \hline x = 4 \end{array}$	$4 \cdot \frac{3x-1}{4} = -2 \cdot 4$ $\begin{array}{r} 3x-1 = -8 \\ +1 \\ \hline 3x = -7 \\ \hline x = \frac{-7}{3} \end{array}$
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$\frac{5(x-1)}{5} = \frac{15}{5}$ $\begin{array}{r} x-1 = 3 \\ +1 \\ \hline x = 4 \end{array}$	$5x - 2 = 8x + 2$ $\begin{array}{r} -8x \\ -2 \\ \hline -3x = 4 \\ \hline x = \frac{-4}{3} \end{array}$
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Solving Quadratic Equations

Rules:

1. Undo the square by taking the square root.
2. ALWAYS put \pm in front of the square root.
3. You cannot take a square root of a negative number.

Solve

$\sqrt{x^2} = \sqrt{49}$ $x = \pm 7$	$\sqrt{x^2} = \sqrt{49}$ <p style="text-align: center; color: red;">no solution</p>
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$3x^2 + 4 = 16$ $\begin{array}{r} -4 \\ \hline 3x^2 = 12 \\ \hline \sqrt{x^2} = \sqrt{4} \\ \hline x = \pm 2 \end{array}$	$\frac{1}{2}x^2 - 4 = 12$ $\begin{array}{r} +4 \\ \hline \frac{1}{2}x^2 = 16 \\ \hline \sqrt{x^2} = \sqrt{32} \\ \hline x = \pm \sqrt{16 \cdot 2} \\ \hline x = \pm 4\sqrt{2} \end{array}$
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Solve for x.

$3x^2 + 5 = 80$ $\begin{array}{r} -5 \\ \hline 3x^2 = 75 \\ \hline \sqrt{x^2} = \sqrt{25} \\ \hline x = \pm 5 \end{array}$	$9x^2 - 35 = 14$ $\begin{array}{r} +35 \\ \hline 9x^2 = 49 \\ \hline \sqrt{x^2} = \sqrt{\frac{49}{9}} \\ \hline x = \pm \frac{7}{3} \end{array}$
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$\sqrt{(x-2)^2} = \sqrt{16}$ $\begin{array}{r} x-2 = \pm 4 \\ +2 \\ \hline x = 2+4 = 6 \\ \quad 2-4 = -2 \end{array}$	$\sqrt{(2x-3)^2} = \sqrt{36}$ $\begin{array}{r} 2x-3 = \pm 6 \\ +3 \\ \hline \frac{2x}{2} = \frac{9}{2} \text{ or } \frac{-3}{2} \\ \hline x = \frac{9}{2} \text{ or } \frac{-3}{2} \end{array}$
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Solve for x. Round to the nearest hundredth.

$$4x^2 + 5 = 7$$

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

$$\sqrt{x^2} = \sqrt{.5}$$

$$x = \pm .71$$

$$7(x-3)^2 = 35$$

$$\sqrt{(x-3)^2} = \sqrt{5}$$

$$x-3 = \pm 2.24$$

$$x = 5.24 \text{ or } .76$$

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$$\frac{3}{2}(x+1)^2 = 33$$

$$\sqrt{(x+1)^2} = \sqrt{22}$$

$$x+1 = \pm 4.69$$

$$x = 3.69 \text{ or } -5.69$$

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$$11x^2 + 3 = 5(4x^2 - 3)$$

$$11x^2 + 3 = 20x^2 - 15$$

$$-9x^2 + 3 = -15$$

$$-9x^2 = -18$$

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

$$x = \pm 1.41$$

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Classwork: p.597 #4 - 42 even
Show work!

Final Five
 Which equation has no solution?

1. $2x^2 - 25 = 7$ 2. $2x^2 + 25 = 7$

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