

# Algebra 2 – Section 5-7

## Solving Radical Equations

Nov 17-3:00 PM

### Solving Radical Equations

- To solve equations with radical equations, isolate the radical then use exponents to cancel the radicals
- Remember to square a binomial means you must foil it
- Foiling results in  $x^2$  equations, to solve  $x^2$  you must set = 0 and factor
- Solving radical equations can sometimes result in extraneous solutions, so please check every answer



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Example 1  $\sqrt{x+2} = 3$

Solve & Check your answer

$$x+2 = 9$$

$$\begin{array}{r} x+2 = 9 \\ -2 \quad -2 \\ \hline x = 7 \end{array}$$

$$\sqrt{7+2} = 3$$

$$\sqrt{9} = 3$$

$$3 = 3 \checkmark$$

Example 2  $\sqrt[3]{12x} = 6$

Solve & Check your answer

$$\frac{12x}{12} = \frac{216}{12}$$

$$x = 18$$

$$\sqrt[3]{12 \cdot 18} = 6$$

$$\sqrt[3]{216} = 6$$

$$6 = 6 \checkmark$$

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Example 3  $\sqrt{x-3} + 5 = x$

Solve & Check your answers

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

$$x-3 = x^2 - 10x + 25$$

$$-x^2 + 11x - 28 = 0$$

$$0 = (x-7)(x-4)$$

$$x = 7 \quad x = 4$$

$$(x-5)(x-5)$$

$$\begin{array}{r} 28 \\ -7 \times -4 \\ \hline 11 \end{array}$$

Example 4  $\sqrt[2]{x^2-8} + 3 = 2x-1$

Solve & Check your answers

$$\sqrt{x^2-8} = 2x-4$$

$$(\sqrt{x^2-8})^2 = (2x-4)^2$$

$$x^2-8 = 4x^2 - 16x + 16$$

$$-3x^2 + 16x - 24 = 0$$

$$0 = x^2 - \frac{16}{3}x + 8$$

$$0 = x(x-3)(x-4)$$

$$x = 0 \quad x = 3 \quad x = 4$$

$$\begin{array}{r} 11 \\ 12 \quad 1 \\ \hline 13 \quad 3 \quad 1 \end{array}$$

$$\begin{array}{r} 12 \\ -3 \times -4 \\ \hline -7 \end{array}$$

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## Guided Practice

1) Solve and check  $\sqrt{x-5} = 4$

$$x=21$$

2) Solve and check  $\sqrt[3]{\frac{x}{5}} = 2$

$$x=-40$$

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## Guided practice

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

$$\begin{array}{r}
 3x-5 = x^2 - 10x + 25 \\
 -3x + 5 \quad \quad -3x + 5 \\
 \hline
 0 = x^2 - 13x + 30 \\
 0 = (x-10)(x-3) \\
 \hline
 x=10 \quad x=3
 \end{array}$$

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- ① 5.7 w.s.  
1-3 all
- ② Pgs. 193-194 (1-4)
- ③  $\frac{1}{2}$  Ch. 5 <sup>Review 9+10 E.C.</sup> Test
- \*④ Ch 4 Test Corrections  
Due Wed.

Jun 2-11:04 AM

Login your clickers & yes calculators.

Have out the 5.7 solving radical equations notes and go to the "Solving radical equations by Graphing" section.

Jun 5-7:24 AM

## Solving Radical Equations by graphing

- To solve radical equations by graphing, ~~enter the left~~ side of the equation as  $f_1(x)$ . Then enter the right side of the equation as  $f_2(x)$ . *Equal sign*
- The x-values of the intersection points of the graph are the solutions to the equation. *Tab menu, 6-Analyze*
- You do not need to check your answers because the calculator will not show extraneous solutions. *45*

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### Example 5

Solve  $\sqrt{3x-5} = x-5$  by graphing

$$x = 10$$

### \*Example 6

Solve  $\sqrt[3]{13x-1} - 4 = x-5$  by graphing

$$x = -2 \quad x = 0 \quad x = 5$$

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## Guided practice

Solve  $\sqrt{12+2x} = x+2$  by graphing

$$x = 2$$

 $(2, 4)$ 

## Guided practice

Solve  $\sqrt{-6x-14} = x+1$  by graphing

NO Solution

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## Homework

- ~~\*~~ Pgs. 193 - 194 1 - 4 (9 & 10 are extra credit)

- 5.7 worksheet 4-6 Graphing

- Ch. 5 review get 1/2 done

- EXAM Due Wednesday review - just keep going!!

Pg. 211 1-4 Algebra } Due  
11-14 Graphing } wed.

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# Homework

- Pg 211
- Solve 1-7 with Algebra
- Solve 11-16 by Graphing

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