

## 8-8 Radical Equations continued.....page #

Goal: Solving Equations with Rational Exponents.

$$(4\sqrt{x+1})^2 = (3\sqrt{x+2})^2$$

$$16(x+1) = 9(x+2)$$

$$\begin{array}{r} 16x+16 = 9x+18 \\ -9x \quad -9x \end{array}$$

$$\begin{array}{r} 7x+16 = 18 \\ -16 \quad -16 \end{array}$$

$$7x = 2$$

May 12-10:30 AM

$$(\sqrt{x+18})^2 = (x-2)^2 \Rightarrow (x-2)(x-2)$$

$$x+18 = x^2 - 2x - 2x + 4$$

$$\begin{array}{r} x+18 = x^2 - 4x + 4 \\ -x \quad -18 \quad -x \quad -18 \end{array}$$

$$0 = x^2 - 5x - 14$$

$$0 = (x-7)(x+2)$$

$$x-7=0 \quad x+2=0$$

May 20-8:19 AM

## Review from yesterday:

$$1. (\sqrt[3]{3x-4})^3 = 2^3$$

$$3x-4 = 8$$

$$x = 4$$

$$\sqrt[3]{3(4)-4} \quad 2$$

$$\sqrt[3]{12-4}$$

$$\sqrt[3]{8}$$

$$2$$

$$2. 4 + \sqrt{x-1} = 5$$

$$-4 \quad -4$$

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

$$x-1 = 1$$

$$+1 \quad +1$$

$$x = 2$$

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Check for  
extraneous  
solutions.

$$3. (\sqrt{8x+6})^2 = (3\sqrt{x})^2$$

$$\begin{array}{r} 8x+6 = 9x \\ -8x \quad -8x \end{array}$$

$$6 = x$$

$$x = 6$$

$$\begin{array}{l} \sqrt{8 \cdot 6 + 6} \\ \sqrt{48 + 6} \\ \sqrt{54} \\ \sqrt{9 \cdot 6} \\ 3\sqrt{6} \end{array} = 3\sqrt{6}$$

$$4. (\sqrt{-3x+33})^2 = (5-x)^2 = (5-x)(5-x)$$

FOIL

$$\begin{array}{r} -3x+33 = 25-10x+x^2 \\ +3x \quad -33 \quad -33 \quad +3x \end{array}$$

$$0 = x^2 - 7x - 8$$

$$0 = (x-8)(x+1)$$

$$\begin{array}{l} x-8=0 \quad x+1=0 \\ \cancel{x=8} \quad \boxed{x=-1} \end{array}$$

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$(x + 12)^{\frac{1}{2} \cdot 2}$

What is a  $\frac{1}{3}$  power the same as?

5.  $(5x + 7)^{\frac{1}{3}} = (3)^3$  }  $\sqrt[3]{5x+7} = 3$   
 $5x + 7 = 27$

6.  $(2x)^2 = (4x + 8)^{\frac{1}{2}}$  }  $2x = \sqrt{4x+8}$   
 $4x^2 = 4x + 8$   
 $4x^2 - 4x - 8 = 0$   
 $4(x^2 - x - 2) = 0$   
 $4(x - 2)(x + 1) = 0$   
 $x - 2 = 0 \quad x + 1 = 0$

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Did you check for extraneous solutions?

7.  $(x + 5)^{\frac{1}{3}} = 3^3$   
 $x + 5 = 27$   
 $x = 22$

$\sqrt[3]{22+5}$   
 $\sqrt[3]{27}$   
 $3 = 3$

8.  $(2x + 15)^{\frac{1}{2}} = x^2$   
 $2x + 15 = x^2$

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Assignment:  
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