

63.  $\frac{2(\sqrt{6}-\sqrt{2})}{(\sqrt{6}+\sqrt{2})(\sqrt{6}-\sqrt{2})}$

1  $\frac{2\sqrt{6}-2\sqrt{2}}{6-2}$

~~$\frac{2\sqrt{6}-2\sqrt{2}}{4}$~~   
 $\frac{\sqrt{6}-\sqrt{2}}{2}$   
 $\frac{\sqrt{6}-\sqrt{2}}{2}$

23.  $(9\sqrt{x}+2)(5\sqrt{x}-3)$

$45\sqrt{x^2} - 27\sqrt{x} + 10\sqrt{x} - 6$   
 $45x - 17\sqrt{x} - 6$

43.  $\frac{4x^2 + \sqrt{28}x^3}{2x}$

$-\frac{4x^2}{2x} + \frac{\sqrt{28}x^3}{2x}$

$-2x + \frac{\sqrt{28}\sqrt{x^3}}{2x}$

$-2x + \frac{\sqrt{4}\sqrt{7}\sqrt{x}\sqrt{x}}{2x}$

$-2x + \frac{2x\sqrt{7x}}{2x}$

$-2x + \sqrt{7x}$

71.  $2t^2(\sqrt{5t} + \sqrt{t})$

$(\sqrt{5t} - \sqrt{t})(\sqrt{5t} + \sqrt{t})$

$\frac{2t^2\sqrt{5t} + 2t^2\sqrt{t}}{5t - t}$

$5t - t$

~~$\frac{2t^2\sqrt{5t} + 2t^2\sqrt{t}}{4t}$~~

$\frac{t\sqrt{5t}}{2} + \frac{t\sqrt{t}}{2}$

0-9+

10-18√

19+

## 5.5 Solving Radical Equations

1. Need to get the root by itself, or one root on each side.
2. undo the root by taking a power
3. Solve the equation & check your answer

$$\text{Ex: } \sqrt[3]{2x+1} - 2 = 3$$

$$\frac{\quad +2 \quad +2}{(\sqrt[3]{2x+1})^3 = (5)^3}$$

$$\frac{2x+1 = 125}{-1 \quad -1}$$

$$\frac{2x = 124}{2 \quad 2}$$

$$x = 62$$

check:

$$\sqrt[3]{2(62)+1} - 2 = 3$$

$$\sqrt[3]{125} - 2 = 3$$

$$5 - 2 = 3$$

$$3 = 3 \checkmark$$

$$\text{Ex: } \sqrt{3x} + 6 = 0$$

$$\frac{-6 \quad -6}{(\sqrt{3x})^2 = (-6)^2}$$

$$\frac{3x}{3} = \frac{36}{3}$$

$$x = 12$$

check:

$$\sqrt{3 \cdot 12} + 6 = 0$$

$$\sqrt{36} + 6 = 0$$

$$6 + 6 = 0$$

$$12 = 0$$

No real solutions

$$\frac{\sqrt{5x+3} - \sqrt{x+11}}{+ \sqrt{x+11} + \sqrt{x+11}} = 0$$

$$(\sqrt{5x+3})^2 = (\sqrt{x+11})^2$$

$$\begin{array}{r} 5x + 3 = x + 11 \\ -x \quad -x \\ \hline \end{array}$$

$$\begin{array}{r} 4x + 3 = 11 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{8}{4} \quad (x=2)$$

check:

$$\begin{array}{l} \sqrt{5(2)+3} - \sqrt{2+11} = 0 \\ \sqrt{13} - \sqrt{13} = 0 \\ 0 = 0 \end{array}$$

$$\frac{\sqrt{x} + 2}{-2} = \frac{x}{-2}$$

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

$$x = (x-2)(x-2)$$

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

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

$$0 = x^2 - 5x + 4$$

$$0 = (x-4)(x-1)$$

$$\begin{array}{r} -4x \\ -1x \\ \hline -5x \end{array}$$

$$\begin{array}{r} x-4=0 \\ +4 \quad +4 \end{array}$$

$$x=4$$

$$\text{or } \begin{array}{r} x-1=0 \\ +1 \quad +1 \end{array}$$

$$\cancel{x=1}$$

HW: p. 346

6-42 evens