

Solving Radical Equations

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

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

$$\text{Ex: } (\sqrt{x})^2 = (7)^2$$

$$x = 49$$

$$\text{Ex: } (\sqrt{x+4})^2 = (12)^2$$

$$x+4 = 144$$

$$\boxed{x = 140}$$

$$\text{Ex: } \sqrt{x-2} + 7 = 16$$

$$(\sqrt{x-2})^2 = (9)^2$$

$$x-2 = 81$$

$$\boxed{x = 83}$$

$$\text{Ex: } (\sqrt[3]{x})^3 = (10)^3$$

$$\boxed{x = 1000}$$

$$\text{Ex: } (\sqrt{2x-6})^2 = (\sqrt{3+x})^2$$

$$2x-6 = 3+x$$

$$x-6 = 3$$

$$\boxed{x = 9}$$

$$\text{Ex: } (\sqrt{x+21} - 1)^2 = (\sqrt{x+12})^2$$

$$(\sqrt{x+21} - 1)(\sqrt{x+21} - 1) = x+12$$

$$\underbrace{\sqrt{x+21}(\sqrt{x+21})}_{x+21} - \underbrace{1(\sqrt{x+21}) - 1(\sqrt{x+21})}_{-2\sqrt{x+21}} + \underbrace{(-1)(-1)}_{+1}$$

$$x+21 - 2\sqrt{x+21} + 1 = x+12$$

$$\frac{-2\sqrt{x+21}}{-2} = \frac{-10}{-2}$$

$$(\sqrt{x+21})^2 = (5)^2$$

$$x+21 = 25$$

$$\boxed{x = 4}$$

HW

Ps 307

Prob: 14, 15

19, 20

24, 31

36, 39