

We did radical equations in Chp 3

- ① Square the equation to get rid of roots
- ② solve the quadratic (using factoring or Quad. Form.)
- ③ check answers (Extraneous roots)

extra - not actual answers

$$5 \neq -5$$

$$(5)^2 = (-5)^2$$

Ex 1 solve

$$a) (\sqrt{x+5})^2 = (x-1)^2 = (x-1)(x-1)$$

$$x+5 = x^2 - x - x + 1$$

$$x+5 = x^2 - 2x + 1$$

$$0 = x^2 - 3x - 4$$

Quad Form
 $ax^2 + bx + c = 0$

Quad Form

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-4)}}{2(1)}$$

$$x = \frac{3 \pm \sqrt{9 + 16}}{2} = \frac{3 \pm \sqrt{25}}{2} = \frac{3 \pm 5}{2}$$

$$x = \frac{8}{2} = 4 \quad \text{or} \quad \frac{-2}{2} = -1$$

Check: ~~$x = -1$~~

$$\sqrt{(-1)+5} = (-1) - 1$$

$$\sqrt{4} = -2$$

NO $\rightarrow 2 \neq -2$

Check: $x = 4$

$$\sqrt{4+5} = 4 - 1$$

$$\sqrt{9} = 3$$

$$3 = 3 \checkmark$$

b) $\sqrt{7x-17} + x = 1$

$$(\sqrt{7x-17})^2 = (1-x)^2 = (1-x)(1-x)$$

$$7x-17 = 1 - 2x + x^2$$

$$0 = x^2 - 9x + 18$$

$$\begin{array}{r} \otimes 18 \mid (-6, 3) \\ \oplus -9 \mid -9 \end{array}$$

$$0 = (x-6)(x-3)$$

$$x = +6, +3$$

Check: ~~$x = 6$~~

$$\sqrt{7(6)-17} + 6 = 1$$

$$\sqrt{42-17} + 6 = 1$$

$$\sqrt{25} + 6 = 1$$

$$5 + 6 = 1$$

$$11 \neq 1$$

NO
answer
 \emptyset

Check: ~~$x = 3$~~

$$\sqrt{7(3)-17} + 3 = 1$$

$$\sqrt{21-17} + 3 = 1$$

$$\sqrt{4} + 3 = 1$$

$$2 + 3 = 1$$

$$5 \neq 1$$