Solving Radical Equations

Wednesday, February 26, 2020 9:26 PM

we solved radical equations in chp 3

$5x - 5$

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

① square both sides to get rid of roots

② solve using quadratic formula

③ Check answers (Extraneous Roots)

extra - not actual answers

Ex 1 solve

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

$x + 5 = (x-1)(x-1)$

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

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

Quad Form

$ax^2 + bx + c = 0$

Factor

$-4 \mid (-4, 1)$

$-3 \mid -3$

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

$x = 4, -1$

Quad Form

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

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

$$x = \frac{3 \pm 5}{2} = 4, -1$$

Check: $x = 4$

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

$\sqrt{9} = 3$

$3 = 3$ ✓

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

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

$\sqrt{4} = -2$

$2 \neq -2$

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

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

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

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

⊗ 18 | (-3, -6)
⊕ -9 | -9

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

$x = +3, +6$

Check: ~~$x=3$~~

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

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

$\sqrt{4} + 3 = 1$

$2 + 3 = 1$

$5 \neq 1$

NO answer ∅

Check: ~~$x=6$~~

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

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

$\sqrt{25} + 6 = 1$

$5 + 6 = 1$

$11 \neq 1$