

Quick Solving Radical Equations Review

Solve each equation. Check for extraneous solutions.

1) $6 = \sqrt{x-5} + 4$

$$\begin{array}{r} -4 \quad -4 \\ (2)^2 (\sqrt{x-5})^2 \\ 4 = x-5 \\ +5 \quad +5 \\ \hline 9 = x \end{array}$$

Check: $6 = \sqrt{9-5} + 4$
 $6 = \sqrt{4} + 4$
 $6 = 2 + 4$
 $6 = 6 \checkmark$

2) $x = 4 + \sqrt{-3x+10}$

$$\begin{array}{r} -4 \quad -4 \\ (x-4)^2 = \sqrt{-3x+10}^2 \\ (x-4)(x-4) = -3x+10 \\ x^2 - 4x - 4x + 16 = -3x + 10 \\ x^2 - 8x + 16 = -3x + 10 \\ +3x \quad -10 \quad +3x \quad -10 \\ \hline x^2 - 5x + 6 = 0 \end{array}$$

Key

$(x-3)(x-2) = 0$

~~$x-3=0$~~

~~$x-2=0$~~

~~$x=3$~~

~~$x=2$~~

Check

NO solution

$3 = 4 + \sqrt{-3(3)+10}$

$2 = 4 + \sqrt{-3(2)+10}$

$3 = 4 + \sqrt{-9+10}$

$2 = 4 + \sqrt{-6+10}$

$3 = 4 + \sqrt{1}$

$2 = 4 + \sqrt{4}$

$3 = 4 + 1$
 $3 \neq 5$

$2 = 4 + 2$
 $2 \neq 6$