



10-4 Solving Radical Equations

Solve each radical equation and check your solution. If there is no solution, write *no solution*.

1. $\sqrt{3t+2} = 8$
 $\sqrt{3t+2} = 8$
 $3t+2 = 64$
 $3t = 62$
 $t = \frac{62}{3}$

check:
 $\sqrt{3 \cdot \frac{62}{3} + 2} = 8$
 $\sqrt{62 + 2} = 8$
 $\sqrt{64} = 8$
 $8 = 8 \checkmark$

2. $\sqrt{2n-4} = 6$
 $\sqrt{2n-4} = 6$
 $2n-4 = 36$
 $2n = 40$
 $n = 20$

check:
 $\sqrt{2(20)-4} = 6$
 $\sqrt{40-4} = 6$
 $\sqrt{36} = 6$
 $6 = 6 \checkmark$

3. $\sqrt{2x-1} = x$
 $\sqrt{2x-1} = x$
 $2x-1 = x^2$
 $0 = x^2 - 2x + 1$
 $0 = (x-1)(x-1)$
 $x-1 = 0$
 $x = 1$

check:
 $\sqrt{2(1)-1} = 1$
 $\sqrt{2-1} = 1$
 $\sqrt{1} = 1$
 $1 = 1 \checkmark$

4. $\sqrt{x-4} = \sqrt{3x+2}$
 $\sqrt{x-4} = \sqrt{3x+2}$
 $x-4 = 3x+2$
 $-4 = 2x+2$
 $-6 = 2x$
 $-3 = x$
 $\boxed{\times}$ No real number solutions.

check:
 $\sqrt{-3-4} = \sqrt{3(-3)+2}$
 $\sqrt{-7} = \sqrt{-9+2}$
 $\sqrt{-7} = \sqrt{-7}$
 true, but $\sqrt{-7}$ is not a real #

5. $\sqrt{r+5} = 2\sqrt{r-1}$
 $\sqrt{r+5} = 2\sqrt{r-1}$
 $r+5 = 4(r-1)$
 $r+5 = 4r-4$
 $5 = 3r-4$
 $9 = 3r$
 $3 = r$

check:
 $\sqrt{3+5} = 2\sqrt{3-1}$
 $\sqrt{8} = 2\sqrt{2}$
 $\sqrt{4} \cdot \sqrt{2} = 2\sqrt{2}$
 $2\sqrt{2} = 2\sqrt{2} \checkmark$



$x = 2$

$x^2 = 4$