

## Radical Equation Review

Solve each equation. Remember to check for extraneous solutions.

1)  $-6 = \sqrt{k} - 10$

$$\begin{array}{r} +10 \\ 4 = \sqrt{k} \end{array}$$

$$16 = k$$

2)  $5 = 5\sqrt{\frac{r}{10}}$

$$1 = \sqrt{\frac{r}{10}}$$

$$1 = \frac{r}{10}$$

$$10 = r$$

3)  $\sqrt{n-8} + 9 = 16$

$$\sqrt{n-8} = 7$$

$$n-8 = 49$$

$$n = 57$$

4)  $-9\sqrt{-3-x} = -9$

$$\sqrt{-3-x} = 1$$

$$-3-x = 1$$

$$-x = 4$$

$$x = -4$$

5)  $\sqrt{-1-n} = \sqrt{2n+29}$

$$-1-n = 2n+29$$

$$-30 = 3n$$

$$-10 = n$$

6)  $x-4 = \sqrt{4x-20}$

$$x^2 - 8x + 16 = 4x - 20$$

$$x^2 - 12x + 36 = 0$$

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

$$x = 6$$

check

$$6-4 = \sqrt{4(6)-20}$$

$$2 = \sqrt{4}$$

$$2 = 2 \checkmark$$

7)  $x = \sqrt{72-x}$

$$x^2 = 72-x$$

$$x^2 + x - 72 = 0$$

$$(x+9)(x-8) = 0$$

$$x = -9 \quad x = 8$$

check

$$-9 = \sqrt{72-(-9)}$$

$$-9 = \sqrt{81}$$

$$-9 \neq 9$$

$$8 = \sqrt{72-8}$$

$$8 = \sqrt{64}$$

$$8 = 8 \checkmark$$

9)  $b-1 = \sqrt{6b-11}$

$$b^2 - 2b + 1 = 6b - 11$$

$$b^2 - 8b + 12 = 0$$

$$(b-6)(b-2) = 0$$

$$b = 6 \quad b = 2$$

check

$$6-1 = \sqrt{6(6)-11}$$

$$5 = \sqrt{25}$$

$$5 = 5 \checkmark$$

$$2-1 = \sqrt{6(2)-11}$$

$$1 = 1 \checkmark$$

8)  $\sqrt{2r-11} = r-7$

$$2r - 11 = r^2 - 14r + 49$$

$$r^2 - 16r + 60 = 0$$

$$(r-6)(r-10) = 0$$

$$r = 6 \quad r = 10$$

check

$$\sqrt{2(6)-11} = 6-7$$

$$1 \neq -1$$

$$\sqrt{2(10)-11} = 10-7$$

$$\sqrt{9} = 3$$

$$3 = 3 \checkmark$$

10)  $-x + \sqrt{12-2x} = -6$

$$\sqrt{12-2x} = x-6$$

$$12-2x = x^2 - 12x + 36$$

$$x^2 - 10x + 24 = 0$$

$$(x-6)(x-4) = 0$$

$$x = 6 \quad x = 4$$

check

$$-6 + \sqrt{12-2(6)} = -6$$

$$-6 = -6 \checkmark$$

$$-4 + \sqrt{12-2(4)} = -6$$

$$-4 + 2 = -6$$

$$-2 \neq -6$$