

- 1) Isolate the radical
- 2) Square both sides
- 3) Solve equation
- 4) check

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Algebra II

Solving Radical Equations

Solve the following radical equations and CHECK each solution

1. $(\sqrt{x-4})^2 = (6)^2$
 $x-4 = 36$
 $+4 \quad +4$
 $x = 40$
 ✓

2. $5\sqrt{4x-8} + 2 = 12$
 $-2 \quad -2$
 $5\sqrt{4x-8} = 10$
 $\frac{5}{5} \quad \frac{5}{5}$
 $(\sqrt{4x-8})^2 = (2)^2$
 $4x-8 = 4$
 $+8 \quad +8$
 $4x = 12$
 $\frac{4x}{4} = \frac{12}{4}$
 $x = 3$
 ✓

3. $5 + \sqrt{x+5} = 7$
 $-5 \quad -5$
 $(\sqrt{x+5})^2 = (2)^2$
 $x+5 = 4$
 $-5 \quad -5$
 $x = -1$
 ✓

4. $2\sqrt{2x-1} + 8 = 16$
 $-8 \quad -8$
 $2\sqrt{2x-1} = 8$
 $\frac{2}{2} \quad \frac{2}{2}$
 $(\sqrt{2x-1})^2 = (4)^2$
 $2x-1 = 16$
 $+1 \quad +1$
 $2x = 17$
 $\frac{2x}{2} = \frac{17}{2}$
 $x = 8.5$
 ✓

5. $4 + \sqrt{2x-5} = 1$
 $-4 \quad -4$
 $(\sqrt{2x-5})^2 = (-3)^2$
 $2x-5 = 9$
 $+5 \quad +5$
 $2x = 14$
 $\frac{2x}{2} = \frac{14}{2}$
 $x = 7$
 No Solution

6. $(\sqrt{x^2+x})^2 = (\sqrt{4x+10})^2$
 $x^2+x = 4x+10$
 $-4x-10 \quad -4x-10$
 $x^2-3x-10 = 0$
 $(x-5)(x+2) = 0$
 $x = 5 \quad x = -2$
 ✓ ✓

$$7. x = \sqrt{7x-12}$$

$$x^2 = 7x - 12$$

$$-7x + 12 \quad -7x + 12$$

$$x^2 - 7x + 12 = 0$$

$$(x-4)(x-3) = 0$$

$$\underline{x=4 \quad | \quad x=3}$$

	x	+4
x	x ²	4x
+4	4x	16

$$x^2 + 8x + 16$$

$$8. (x+4) = \sqrt{x+6}$$

$$(x+4)(x+4) = x+6$$

$$x^2 + 8x + 16 = x + 6$$

$$-x - 6 \quad -x - 6$$

$$x^2 + 7x + 10 = 0$$

$$(x+5)(x+2) = 0$$

$$\underline{x=-5 \quad | \quad x=-2}$$

	x	-1
x	x ²	-x
-1	-x	1

$$x^2 - 2x + 1$$

$$9. x = 1 + \sqrt{x+5}$$

$$-1 \quad -1$$

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

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

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

$$-x - 5 \quad -x - 5$$

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

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

$$\underline{x=4 \quad | \quad x=-1}$$

$$10. 3 = -x + \sqrt{x+5}$$

$$+x \quad +x$$

$$(x+3) = \sqrt{x+5}$$

$$(x+3)(x+3) = x+5$$

$$x^2 + 6x + 9 = x + 5$$

$$-x - 5 \quad -x - 5$$

$$x^2 + 5x + 4 = 0$$

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

$$\underline{x=-4 \quad | \quad x=-1}$$

	x	+3
x	x ²	+3x
+3	+3x	+9

$$x^2 + 6x + 9$$

$$11. x = 2 + \sqrt{x+4}$$

$$-2 \quad -2$$

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

	x	-2
x	x ²	-2x
-2	-2x	4

$$x^2 - 4x + 4$$

$$(x-2)(x-2) = x+4$$

$$x^2 - 4x + 4 = x + 4$$

$$-x - 4 \quad -x - 4$$

$$x^2 - 5x = 0$$

$$x(x-5) = 0$$

$$\underline{x=0 \quad | \quad x=5}$$

$$12. (4y+3) = (2y)^2$$

$$4y+3 = 4y^2$$

$$-4y^2 \quad -4y-3$$

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

$$0 = y^2 - y - \frac{3}{4}$$

$$\frac{(y-\frac{3}{2})(y+\frac{1}{2})}{4}$$

$$(y-\frac{3}{2})(y+\frac{1}{2})$$

$$n = (2a-2)(2a+1)$$

$$2y^2 = 0 \quad 2y+1 = 0$$

$$\frac{2y}{2} = \frac{0}{2} \quad \frac{2y}{2} = \frac{-1}{2}$$

$$y = 0 \quad y = -\frac{1}{2}$$