Solving Radical Equations:

1. Isolate the radical on one side of the equation.
2. Raise both sides of the equation to the same power as the index of the radical.
3. Finish solving for x.
4. Check your answers.

No solution

Solve.

1. $6\sqrt{2x-9}+36=12$

$-36 \quad -36$

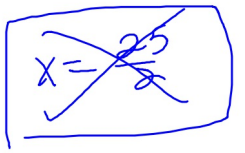
$\frac{6\sqrt{2x-9}}{6} = \frac{-24}{6}$

$(\sqrt{2x-9})^2 = (-4)^2$

$2x-9 = 16$

$+9 \quad +9$

$2x = 25$



This is the only solution and it is extraneous so there is No Solution to this equation

Solve.

Solution is: 5

2. $\left(\sqrt{x+20}\right)^2 = (x)^2$

$x + 20 = x^2$

$x^2 - x - 20 = 0$

$(x-5)(x+4) = 0$

-20, -5, 4, -1

$x = 5, -4$

-4 is an extraneous solution

Solve.

Solution is: 6

3. $\sqrt{x+10} + 2 = x$

$-2 \quad -2$

$\left(\sqrt{x+10}\right)^2 = (x-2)^2$

$x + 10 = x^2 - 4x + 4$

-6, -6, 1, -5

$0 = x^2 - 5x - 6$

$0 = (x-6)(x+1)$

$x = 6, -1$

-1 is an extraneous solution

Solve.

Solution is: $-1, -3$

4. $\sqrt{2x+6} - x = 3$ $+x$ $+x$

$(\sqrt{2x+6})^2 = (3+x)^2$

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

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

$0 = (x+3)(x+1)$

$x = -3, -1$

both are solutions