Solving Radical Equations

When solving eq:

* order of op. backwards

Mult ⇄ Div

Add ⇄ Subtr

Squaring ⇄ Sq. root

Cube ⇄ cube root

Solve:

$$\left(\sqrt{x+5}\right)^2 = (3)^2$$

① Isolate the radical

② Square both sides

$x + 5 = 9$

$-5 \quad -5$

$x = 4$

③ Solve & check

$\sqrt{4+5} \stackrel{?}{=} 3$

$\sqrt{9} = 3$

$3 = 3$ ✓

Solve:

$$\frac{4\sqrt{x-2}}{4} = \frac{12}{4}$$

$$\left(\sqrt{x-2}\right)^2 = (3)^2$$

$$x - 2 = 9$$

$$+2 \quad +2$$

$$x = 11$$

① Isolate

② Square both sides

Solve:

$$\left(\sqrt[3]{x-1}\right)^3 = (2)^3$$

$$x - 1 = 8$$

$$+1 \quad +1$$

$$x = 9$$

Solve:

$$\left(\sqrt[3]{x-1}\right)^3=\left(\sqrt[3]{4x-5}\right)^3$$

$$x-1=4x-5$$

$$4=3x$$

$$\frac{4}{3}=x$$

Solve: $-6 = \sqrt{2m-6} - 8$

$+8$

$(2)^2 = (\sqrt{2m-6})^2$

$4 = 2m-6$

$5 = m$

Solve: $\left(\sqrt{\frac{p}{2}}\right)^2 = \left(\sqrt{35-2p}\right)^2$

$2\left(\frac{p}{2} = 35-2p\right)$

$p = 70 - 4p$

$p = 14$

$$3\sqrt[5]{(x+1)^3}+1=25$$

$$\frac{3\sqrt[5]{(x+1)^3}}{3}=\frac{24}{3}$$

$$\left(\sqrt[5]{(x+1)^3}\right)^5=(8)^5$$

$$\sqrt[3]{(x+1)^3}=\sqrt[3]{32,768}$$

$$x+1=32$$

$$x=31$$