

Solving Square Root Equations

4 Steps

① Isolate Radical

② Get rid of radical (square both sides...)

③ solve for variable

④ check

You can
get a
calculator!
😊

$$\begin{aligned} \textcircled{1} \quad \frac{2\sqrt{x+1}}{2} &= \frac{14}{2} \\ (\sqrt{x+1})^2 &= (7)^2 \\ x+1 &= 49 \\ \begin{array}{r} -1 \qquad -1 \\ \hline x &= 48 \end{array} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad \sqrt{2m-6} + 6 &= 0 \\ \begin{array}{r} -6 \quad -6 \end{array} \\ (\sqrt{2m-6})^2 &= (-6)^2 \\ 2m-6 &= 36 \\ \begin{array}{r} +6 \quad +6 \end{array} \\ 2m &= 42 \\ m &= 21 \end{aligned}$$

NO
SOLUTION

$$\textcircled{3} (\sqrt{x+18})^2 = (x-2)^2$$

set to 0.

$$\begin{array}{r} x+18 = x^2 - 4x + 4 \\ -x - 18 \quad -x \quad -18 \\ \hline 0 = x^2 - 5x - 14 \\ 0 = (x+2)(x-7) \end{array}$$

$$(x-2)(x-2)$$

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

$$\begin{array}{l} \rightarrow x+2=0 \\ \quad \quad \quad \cancel{x=-2} \end{array} \quad \begin{array}{l} x-7=0 \\ \boxed{x=7} \end{array}$$

$$\textcircled{4} (\sqrt{2x+14})^2 = (x+3)^2$$

$$2x+14 = x^2 + 6x + 9$$

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

$$0 = (x+5)(x-1)$$

$$\begin{array}{l} \cancel{x=-5} \quad \boxed{x=1} \\ 2=-2 \quad 4=4 \end{array}$$

$$\textcircled{5} (\sqrt{x+7})^2 = (1+\sqrt{x})^2$$

$$x+7 = 1 + 2\sqrt{x} + x$$

$$x+6 = 2\sqrt{x} + x$$

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

$$x=9$$

$$(1+\sqrt{x})(1+\sqrt{x})$$

$$1 + \sqrt{x} + \sqrt{x} + x$$

$$\textcircled{6} \sqrt{x+2} = \sqrt{3x+8}$$

$$\textcircled{7} \quad 6 + \sqrt[3]{x-4} = 9$$

$$\textcircled{8} \quad (3x-1)^{1/5} = 2$$