Radical Equations

10th Grade

Squaring both sides solves it — and can invent answers that do not work.

Isolate the radical, square, solve — then check every answer in the original equation.

1

ISOLATE THE RADICAL

Get the root term alone on one side first.

2

SQUARE BOTH SIDES

This removes the root but may introduce false solutions.

3

SOLVE

Often a linear or quadratic equation.

4

CHECK EVERY ANSWER

Substitute into the ORIGINAL. Discard any that fail.

WHY CHECKING MATTERS

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

Check: $x = 3$ works. $x = -2$ gives $\sqrt{4} = -2$, which is false.

So $x = 3$ only.

Squaring is not reversible. That is exactly why extraneous solutions appear.