

Extraneous Solutions Handout II:

Equations with Radicals

We must check all solutions we get to equations with radicals to make sure none are extraneous solutions.

Example:

$$\begin{aligned}x &= \sqrt{x^2 - 2x - 6} \\x^2 &= x^2 - 2x - 6 \\0 &= -2x - 6 \\6 &= -2x \\-3 &= x\end{aligned}$$

Check:

$$\begin{aligned}-3 &= \sqrt{(-3)^2 - 2(-3) - 6} \\-3 &= \sqrt{9 + (-6) - 6} \\-3 &= \sqrt{9 + 6 - 6} \\-3 &= \sqrt{9} \\-3 &= 3\end{aligned}$$

$-3 \neq 3$, so there is NO solution.