5 Radical Equations Word Problems

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PRE-CALCULUS 11 Ch 5 – Day 5: RADICAL EQUATIONS (Part 2 Word Problems)

RADICAL EQUATIONS

$\sqrt{x+5} = 3$

$x+5 \geq 0$

SOLVING RADICAL EQUATIONS ALGEBRAICALLY- remember the steps!

- State **restrictions** on *x because* radicand must be ≥ 0
- Isolate the square root.
- Square both sides of the equation. Remember: $(a+b)^2 = a^2+2ab+b^2$
- Simplify and solve for x.
- Check against the restrictions. } Are there extraneous roots?!

Check by plugging in

Example 1: The equations for the period of a pendulum is $T = 2\pi\sqrt{\frac{L}{32}}$ where T is the time in seconds and L is the length in feet. Find the length of a pendulum of a clock that has a period of 4 seconds.

$T = 4, L = ?$

$\frac{4^2}{2\pi} = \frac{2\pi}{2\pi}\sqrt{\frac{L}{32}}$ Isolate "$\sqrt{\ }$"

$\left(\frac{2}{\pi}\right)^2 = \left(\sqrt{\frac{L}{32}}\right)^2$ Square both sides.

$32 \times \frac{4}{\pi^2} = \frac{L}{32} \times 32$

$L = 12.969$

$L \approx 13$

The length is about 13 feet.

Assignment: Sec 5.3, p. 301 #12, 13 or 14, 15, 16