

5 Radical Equations Word Problems

January 1, 2020 9:20 PM

PRE-CALCULUS 11

Ch 5 – Day 5: RADICAL EQUATIONS (Part 2 Word Problems)

RADICAL EQUATIONS

$$\sqrt{x+5} = 3$$

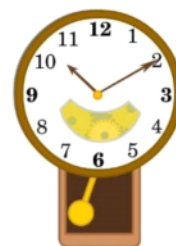
$$x+5 \geq 0$$

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 " $\sqrt{\quad}$ "

$$\left(\frac{4}{\pi}\right)^2 = \left(\sqrt{\frac{L}{32}}\right)^2$$

Square both sides.

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

$$L = 12.969$$

$$L \approx 13$$

The length is about 13 feet.

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