

B.4 - Solving Square Root and Radical Equations**Day 3****Problem 4** Checking for Extraneous Solutions

Solve the equation. Remember to check for extraneous solutions.

$$(\sqrt{7x-14})^2 = (x-2)^2$$

$$\begin{array}{r} 7x-14 \\ \underline{-7x+14} \end{array} = \begin{array}{r} x^2-4x+4 \\ \underline{-7x+14} \end{array}$$

$$0 = x^2 - 11x + 18$$

sum mult

$$0 = (x-9)(x-2)$$

Same STEPS as before:

1. Isolate the radical.
2. Raise each side to the power indicated by the index.
3. Solve for the variable.

$$x=9, x=2$$

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Solve the equation. Remember to check for extraneous solutions.

$$\begin{array}{r} \sqrt{5x-1}+3 = x \\ \underline{-3} \quad \underline{-3} \end{array}$$

$$(\sqrt{5x-1})^2 = (x-3)^2$$

$$\begin{array}{r} 5x-1 \\ \underline{-5x+1} \end{array} = \begin{array}{r} x^2-6x+9 \\ \underline{-5x+1} \end{array}$$

$$0 = x^2 - 11x + 10$$

sum mult

$$0 = (x-10)(x-1)$$

$$x=10, x=1$$

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Solve the equation. Remember to check for extraneous solutions.

$$\sqrt{x+7} - x = 5$$

+x +x

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

$$x+7 = x^2 + 10x + 25$$

-x -7 -x -7

$$0 = x^2 + 9x + 18$$

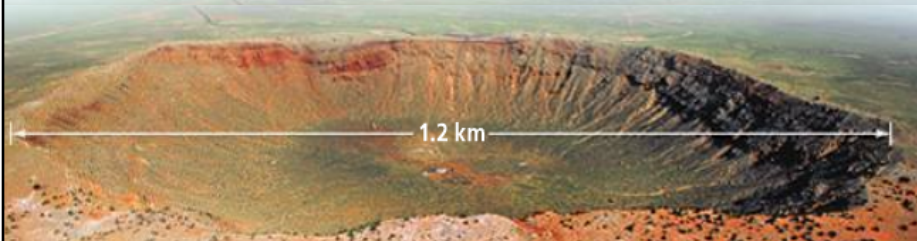
$$0 = (x+6)(x+3)$$

$$x = -6, x = -3$$

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Problem 3 Using Radical Equations STEM

Earth Science For Meteor Crater in Arizona, the formula $d = 2\sqrt[3]{\frac{V}{0.3}}$ relates the diameter d of the rim (in meters) to the volume V (in cubic meters). What is the volume of Meteor Crater? (All values are approximate.)



$$\frac{1200}{2} = \frac{2}{2} \sqrt[3]{\frac{V}{0.3}}$$

$$(600)^3 = \left(\sqrt[3]{\frac{V}{0.3}}\right)^3$$

$$0.3 \cdot 216,000,000 = \frac{V}{0.3} \cdot 0.3$$

$$V = 64,800,000 \text{ m}^3$$

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