


Section 6-5 Solving Square Root and Other Radical Equations

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SOLVE IT! Getting Ready!

You are a passenger in the car. You are using a cell phone that connects with the cell phone tower shown. The tower has an effective range of 6 mi. How many miles do you have to finish your call? Justify your answer.



$$a^2 + b^2 = c^2$$

$$a^2 + 3^2 = 6^2$$

$$\sqrt{a^2} = \sqrt{36 - 9}$$

$$a = \sqrt{27}$$

$$a \approx 5.2 \text{ m}$$

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A radical equation is an equation that has a variable in a radicand or a variable with a rational exponent.

-you will following the same steps to solving an equation: isolate the variable by using inverse operations

-undo the root by raising both side to the index

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Solve:

$$\sqrt{4x + 1} - 5 = 0$$

$$(\sqrt{4x + 1} - 5)^2 = 6^2$$

$$4x + 1 = 25$$

$$\frac{4x}{4} = \frac{24}{4}$$

$$x = 6 \checkmark$$

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Solve: $(6x + 9)^{\frac{1}{3}} - 5 = -2$

$$((6x + 9)^{\frac{1}{3}})^3 = (3)^3$$

$$6x + 9 = 27$$

$$\frac{6x}{6} = \frac{18}{6}$$

$$x = 3 \checkmark$$

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Solve: $\frac{2(x + 3)^2}{2} = 8$

$$((x + 3)^2)^{\frac{1}{2}} = (4)^{\frac{3}{2}}$$

$$x + 3 = \pm 8$$

$$x = 8 - 3 = 5$$

$$x = -8 - 3 = -11$$

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A parabolic goblet with a cup that is as wide as it is tall holds $1.74r^3$ oz of water when full, where r is the radius in inches of the circular rim. What is the radius of a goblet that holds 9 oz.?



$$9 = 1.74r^3$$

$$\frac{9}{1.74} = \frac{1.74r^3}{1.74}$$

$$\sqrt[3]{5.172} = \sqrt[3]{1.74r^3}$$

$$1.72 = r$$

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Hwk: pg. 395 - 396
#10 - 24 (evens),
50 - 54 (evens)

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