

The background of the slide is a light-colored, textured surface, possibly a planet's surface, with a large, dark, circular arc on the left side. Several smaller, reddish-brown spheres are scattered across the top and bottom right areas.

Solve Radical Equations

Section 6.6

Algebra 2

Mr. Keltner

Radical Equations

- Equations that have radicals with variables in their radicand(s) are called radical equations.
- A few examples are:

$$\sqrt{x + 25} = 4$$

$$2\sqrt[3]{x - 3} = 4$$

$$\sqrt[3]{x} - 9 = -1$$

Steps to Solving Radical Equations

- Isolate the radical expression on one side of the equation.
- Raise each side of the equation to a power that matches the (larger) index of the radical expression(s).
- Solve the equation.
CHECK YOUR SOLUTIONS.

- Example 1: Solve

$$\sqrt{5x - 9} = 11$$

Example 2

- If Kevin is hanging Christmas lights and leans a ladder against the side of the house, the height where it contacts the house is given by

$$h(x) = \sqrt{225 - x^2}$$

- Where x is the distance the ladder is away from the base of the house.
- Find the distance the ladder should be placed from the house in order to reach 12 feet above the ground.



No matter what Keltner says, the word “*radical*” is NOT what comes to mind.

Rational Exponents

- When we encounter equations where the variable has a rational exponent, or fraction, we raise each side of the equation to the *reciprocal* of that fraction's exponent.
- Example 3: Solve $7x^{3/5} = 56$

Example 4

● Solve $(x - 4)^{2/3} - 9 = 16$

Example 5

- This example illustrates the importance of checking your answers.
- Solve $x - 8 = \sqrt{x - 6}$

Example 6

- Sometimes it may be necessary to square an equation more than once in order to eliminate any radicals.
- Solve $\sqrt{x + 6} = \sqrt{11 - x} - 3$

The background features a light-colored, textured surface, possibly a globe or a map. A large, dark, curved arc spans across the left side of the image. In the upper left corner, there are three small, reddish-brown spheres arranged in a slight curve. In the bottom right corner, there is a larger, more detailed sphere with a reddish-brown and white pattern, resembling a planet or a globe.

Assessment

Pgs. 456-457:

#'s 6-18, 26-31, 37-48, skip 43 & 44