Objective: Solve square root equations algebraically.

<u>Concept</u>

A <u>Radical Equation</u> contains a variable within a radical or a variable raised to a non-integer rational exponent.

Examples $\sqrt{x-4} = 7$ $(x+5)^{\frac{1}{2}} = 9$ $\sqrt[3]{x^2-5} = 2$

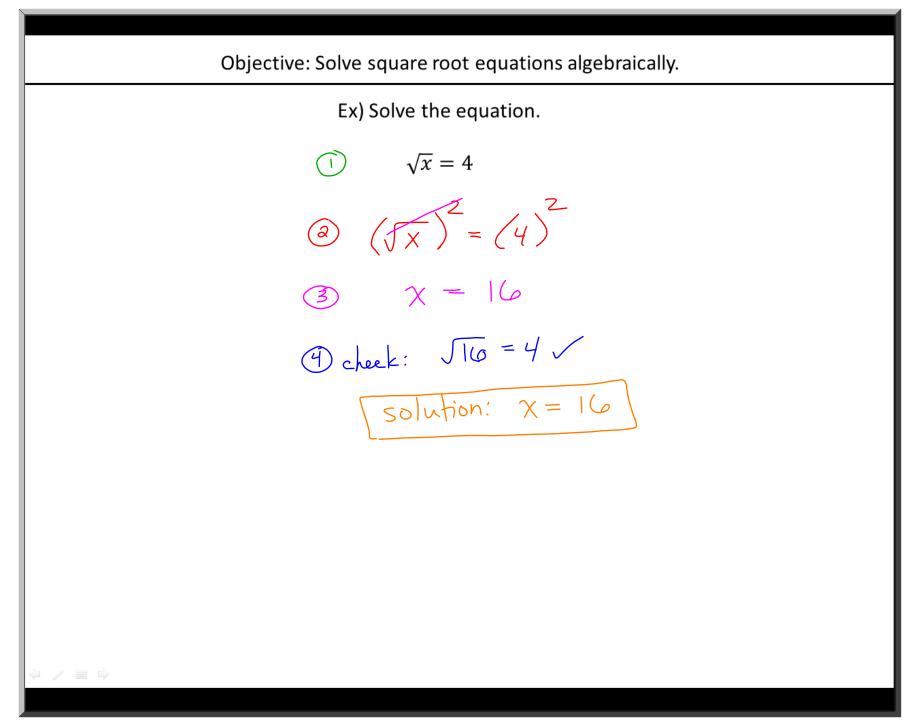
Non-Examples

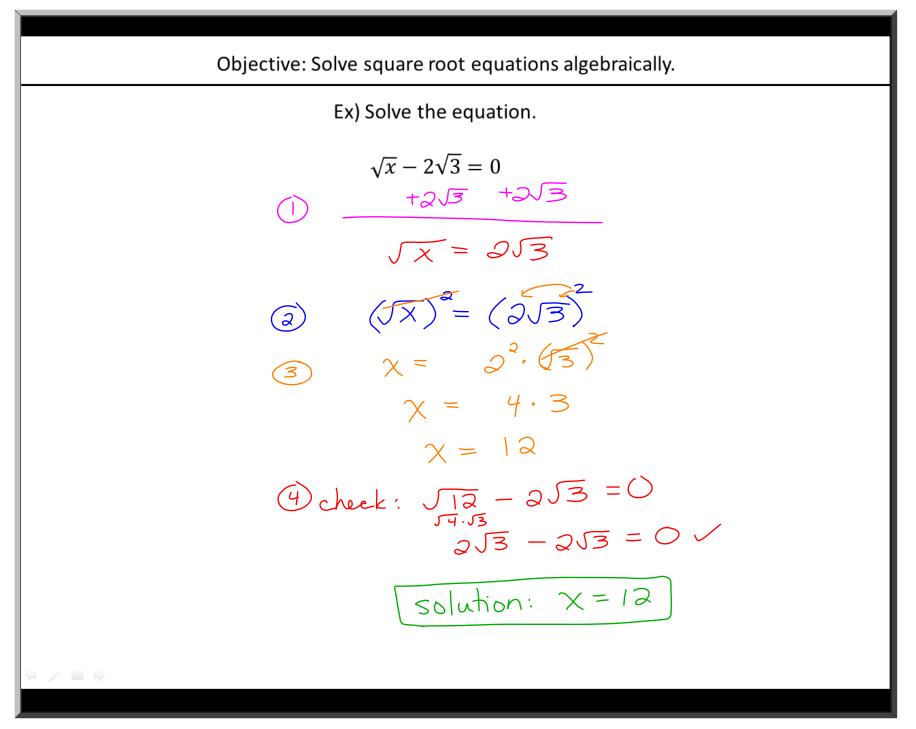
 \sqrt{x} + 9 (no equal sign)

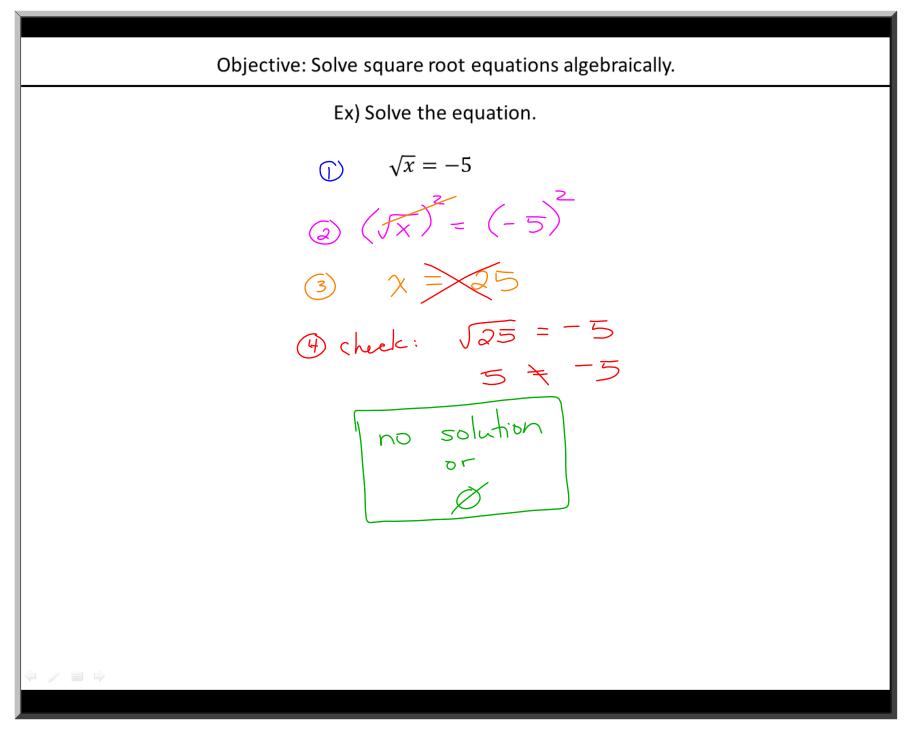
x - 12 = 6 (no radical or non-integer rational exponent)

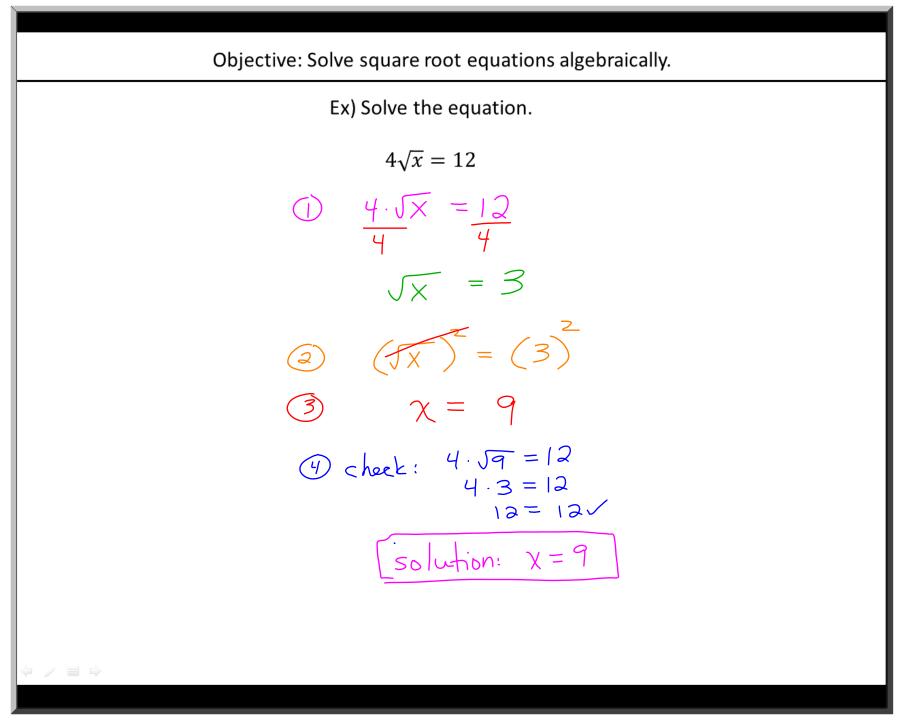
 $(x+4)^{\frac{1}{2}}$ (no equal sign)

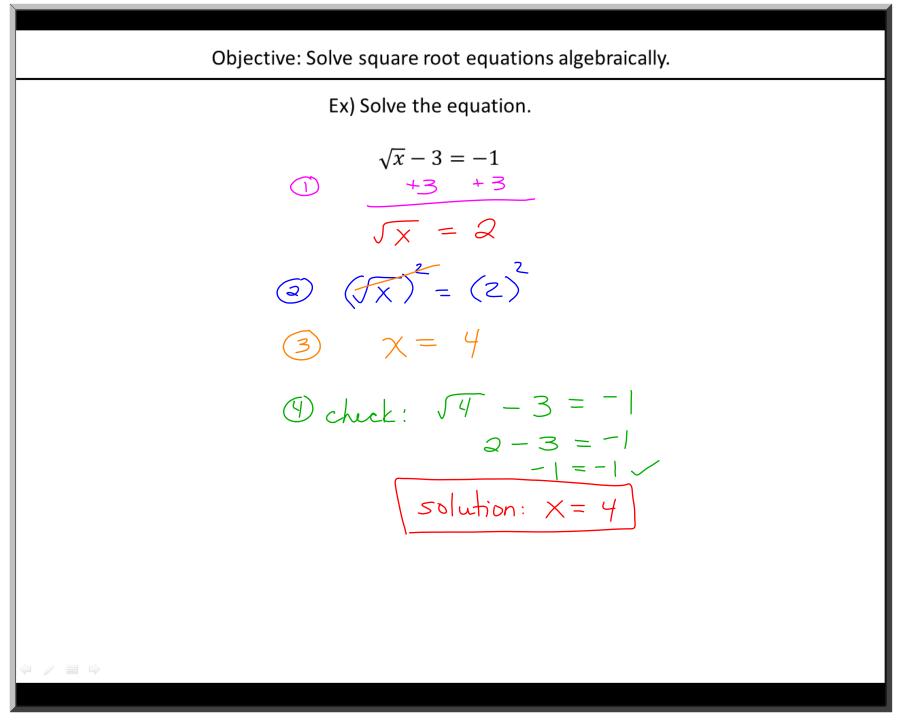
	<u>Concept</u>
	Steps to Solve a Radical Equation
	te the radical expression. If the equation contains more than one call expression, choose one to isolate.
2. Raise	e both sides of the equation to the appropriate power so the isolated
	t and power cancel.
. Solve	the resulting equation. Be aware of whether the equation is linear or
3. Solve qua	e the resulting equation. Be aware of whether the equation is linear or dratic.
8. Solve qua	the resulting equation. Be aware of whether the equation is linear or
3. Solve qua 1. Chec	e the resulting equation. Be aware of whether the equation is linear or dratic.
3. Solve qua 1. Chec Ra	e the resulting equation. Be aware of whether the equation is linear or dratic. k for Extraneous Solutions and then write the final solution set. adical equations can have <u>extraneous solutions</u> :
3. Solve qua 1. Chec Ra	e the resulting equation. Be aware of whether the equation is linear or dratic. k for Extraneous Solutions and then write the final solution set.
3. Solve qua 4. Chec Ra 1.	e the resulting equation. Be aware of whether the equation is linear or dratic. k for Extraneous Solutions and then write the final solution set. adical equations can have <u>extraneous solutions</u> : . Solutions that fail to make the left side and right side of the



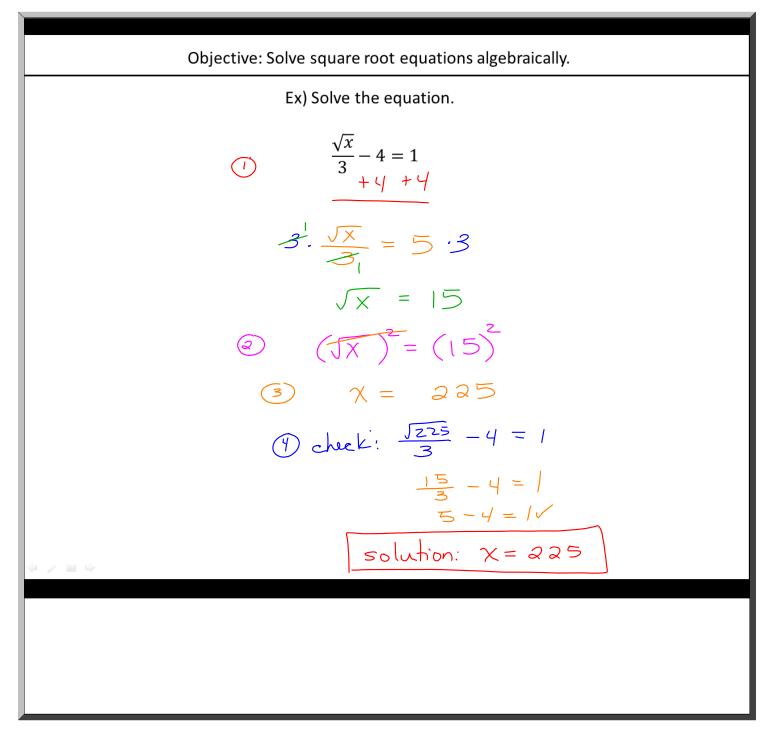








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Objective: Solve square root equations algebraically.

<u>Closure</u>

A student solved a square root equation. The work is shown. Explain any mistakes you find in the student's procedure and determine the correct solution.

solve:
$$2\sqrt{x} - 6 = 12$$

step 1: $\sqrt{x} - 6 = 6$
step 2: $\sqrt{x} = 12$
step 3: $x = 2\sqrt{3}$

There are two mistakes in the student's procedure. In step 1, the student divided by 2 instead of adding 6. And in step 3, the student squared \sqrt{x} but took the square root of 12, $\sqrt{12}$. The correct solution is x = 81.

