

Simplifying Radical Expression and Variables With Rational Exponents

Lesson 011 | Algebra I | Radicals and rational exponents

<https://www.youtube.com/watch?v=GVZYS50AVsU>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01 Simplify $\sqrt{175} + \sqrt{63}$ exactly.

02 Solve $\sqrt{x + 5} = 14$. Check for extraneous solutions.

03 Evaluate $8^{2/3}$ and simplify $x^{1/2} \cdot x^{6/2}$ for $x > 0$.

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04 Simplify $\sqrt{(500)} + \sqrt{(720)}$ exactly.

05 Solve $\sqrt{(x + 10)} = 2$. Check for extraneous solutions.

06 Evaluate $2744^{(2/3)}$ and simplify $x^{(1/2)} \cdot x^{(3/2)}$ for $x > 0$.

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01

Simplify $\sqrt{175} + \sqrt{63}$ exactly.

Extract the square factors: $5\sqrt{7} + 3\sqrt{7} = 8\sqrt{7} = 8 \cdot \sqrt{7}$.

02

Solve $\sqrt{x + 5} = 14$. Check for extraneous solutions.

Square both sides: $x+5 = 196$; $x = 191$. Check: $\sqrt{191+5} = 14$, so it is valid.

03

Evaluate $8^{2/3}$ and simplify $x^{1/2} \cdot x^{6/2}$ for $x > 0$.

Take the cube root then square: $(2)^2 = 4$. Add exponents for the same base: $x^{7/2}$.

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04

Simplify $\sqrt{500} + \sqrt{720}$ exactly.

Extract the square factors: $10\sqrt{5} + 12\sqrt{5} = 22\sqrt{5} = 22 \cdot \sqrt{5}$.

05

Solve $\sqrt{x + 10} = 2$. Check for extraneous solutions.

Square both sides: $x+10 = 4$; $x = -6$. Check: $\sqrt{-6+10} = 2$, so it is valid.

06

Evaluate $2744^{(2/3)}$ and simplify $x^{(1/2)} \cdot x^{(3/2)}$ for $x > 0$.

Take the cube root then square: $(14)^2 = 196$. Add exponents for the same base: $x^{(4/2)}$.