Elementary Algebra / Module 12 - Radicals

Module 12 - Radicals (No Audio)

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Topic 1: Square root of a rational perfect square
Problem 1: Find the square root of 16/25. Simplify the fraction and compute the result.

Problem 2: Compute the square root of 81/4. Simplify and provide the exact value.

Topic 2: Pythagorean Theorem
Problem 1: In a right triangle with legs of 6 cm and 8 cm, use the Pythagorean Theorem to find the hypotenuse.
Problem 2: A right triangle has legs of 9 m and 12 m. Apply the Pythagorean Theorem to calculate the hypotenuse.

Topic 3: Word problem involving the Pythagorean Theorem
Problem 1: A ladder is 15 ft long and reaches 12 ft up a wall. Use the Pythagorean Theorem to find the distance from the base of the ladder to the wall.
Problem 2: A rectangle has a diagonal of 17 cm and a width of 8 cm. Find the length using the Pythagorean Theorem.

Topic 4: Finding all square roots of a number
Problem 1: Find all square roots of 25. List both the positive and negative roots.

Problem 2: Determine all square roots of 100. Provide both the positive and negative values.

Topic 5: Square roots of perfect squares with signs
Problem 1: Evaluate $\pm\sqrt{49}$. Provide both square roots and explain the signs.

Topic 6: Square roots of integers raised to even exponents
Problem 1: Simplify $\sqrt{5^4}$. Express the result as a single number.

Topic 7: Introduction to simplifying a radical expression with an even exponent
Problem 1: Simplify $\sqrt{x^4}$. Explain the process and write the simplified expression.

Problem 2: Simplify $\sqrt{y^{26}}$. Show the steps and provide the result.

Topic 8: Square root of a perfect square monomial
Problem 1: Simplify $\sqrt{16x^2}$. Factor the expression and compute the square root.

Problem 2: Compute $\sqrt{25y^4}$. Simplify the monomial under the square root.

Topic 9: Simplifying the square root of a whole number less than 100
Problem 1: Simplify $\sqrt{18}$. Identify if it's a perfect square and provide the result.

Topic 10: Simplifying the square root of a whole number greater than 100
Problem 1: Simplify $\sqrt{120}$. Verify it's a perfect square and provide the result.

Topic 11: Simplifying a radical expression with an even exponent

Topic 12: Introduction to simplifying a radical expression with an odd exponent
Problem 1: Simplify $\sqrt{x^5}$. Break down the exponent and express the result.

Topic 13: Simplifying a radical expression with an odd exponent
Problem 1: Simplify $\sqrt{8x^3}$. Factor and simplify the expression under the radical.

Topic 14: Simplifying a radical expression with two variables
Problem 1: Simplify $\sqrt{40x^{12}y^{11}}$. Factor the expression and simplify the radical.

Problem 2: Compute $\sqrt{25a^4b^2}$. Simplify the multivariate radical expression.

Topic 15: Introduction to square root addition or subtraction

Topic 16: Square root addition or subtraction

Topic 17: Square root addition or subtraction with three terms

Topic 18: Introduction to simplifying a sum or difference of radical expressions: Univariate

Topic 19: Simplifying a sum or difference of radical expressions: Univariate

Topic 20: Introduction to square root multiplication
Problem 1: Explain how to multiply √5 * √3. Compute the product and simplify.

Problem 2: Describe the process to multiply √7 * √2. Provide the simplified result.

Topic 21: Square root multiplication: Basic

Topic 22: Square root multiplication: Advanced

Topic 23: Introduction to simplifying a product of radical expressions: Univariate

Topic 24: Simplifying a product of radical expressions: Univariate

Topic 25: Simplifying a product of radical expressions: Multivariate

Topic 26: Introduction to simplifying a product involving square roots using the distributive property
Problem 1: Simplify √3 (√6 + √2). Use the distributive property and simplify the result.

Problem 2: Compute √5 (√10 - √20). Apply the distributive property and simplify.

Topic 27: Simplifying a quotient of square roots

Topic 28: Rationalizing a denominator: Quotient involving square roots
Problem 1: Rationalize the denominator of 5/√3. Multiply by the conjugate and simplify.

Problem 2: Simplify 7/√5 by rationalizing the denominator. Show the steps and result.

Topic 29: Rationalizing a denominator: Square root of a fraction
Problem 1: Rationalize the denominator of √7 / √2. Simplify the expression.

Problem 2: Compute √10 / √5 and rationalize the denominator. Provide the simplified form.

Topic 30: Rationalizing a denominator: Quotient involving a monomial
Problem 1: Rationalize the denominator of 3 / √(2x). Multiply by the conjugate and simplify.

Problem 2: Simplify 6 / √(3y^2). Rationalize the denominator and express the result.