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LESSON 14: Multiplying Radical Expressions

- Product Rule for Radical: $\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{a \cdot b}$
- The Quotient Rule for Radicals: $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$
- Using the product rule to simplify
- Radical Expressions on the TI Calculator
- To simplify radical expressions with index n by factoring
- Identify factors in radicand with exponents that are multiples of n

Recall the anatomy of radical expressions:

$$b = \sqrt[n]{a}$$

$$b = a^{\frac{1}{n}}$$

State the product rule for radicals:

$$\sqrt[n]{a} \cdot \sqrt[n]{b}$$

State the quotient rule for radicals:

$$\frac{\sqrt[n]{a}}{\sqrt[n]{b}}$$

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Use the rules of exponents and radicals to solve each of the following problems

1. $\sqrt{200}$

2. $\frac{\sqrt{80}}{\sqrt{5}}$

3. $3\sqrt[3]{25} \cdot 2\sqrt[3]{5}$

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4. $\frac{\sqrt{75xy}}{3\sqrt{3x}}$

5. $\sqrt[4]{162x^6}$

6. $\sqrt[4]{27x^3y^5} \cdot \sqrt[4]{3xy^3}$

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7.
$$\frac{\sqrt[3]{189 \cdot x^5 \cdot y^7}}{\sqrt[3]{7 \cdot x^2 \cdot y^2}}$$

8.
$$\sqrt[5]{16 w^4 b^5} \cdot \sqrt[5]{4 w b^6}$$

9.
$$\sqrt[5]{\frac{64 \cdot a^{11} \cdot b^{28}}{2 \cdot a \cdot b^{-2}}}$$