

5-6 Radical Expressions Part 1 - Microsoft Word

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5.6. Advanced Algebra

DATE: 5/20

Radical Expressions (Part 1)

Target 10A. Simplify radical expressions with various indices.



Product Property of Radicals

For any real numbers a and b and any integer $n > 1$,

1. If n is even and a and b are both nonnegative, then $\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$
2. If n is odd, then $\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$

Simplify each expression.

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 2. If n is odd, then $\sqrt[n]{ab} = \sqrt[n]{a} \cdot \sqrt[n]{b}$

Simplify each expression.

1. $\sqrt[2]{16p^8q^7}$

$$\sqrt[2]{2^4 \cdot p^8 \cdot q^6 \cdot q}$$

$$2^2 p^4 q^3 \sqrt[2]{q}$$

$$4 p^4 q^3 \sqrt[2]{q} \quad \checkmark$$

2. $\sqrt[2]{75a^6b^{13}}$

$$\sqrt[2]{3 \cdot 5^2 \cdot a^6 \cdot b^{12} \cdot b}$$

$$5a^3b^6 \sqrt[2]{3b} \quad \checkmark$$

3. $\sqrt[3]{243}$

$$\sqrt[3]{3^5}$$

$$\sqrt[3]{3^4 \cdot 3}$$

$$3^2 \sqrt[3]{3} = 9\sqrt[3]{3} \quad \checkmark$$

4. $\sqrt[3]{16y^3}$

$$\sqrt[3]{2^4 y^3}$$

$$\sqrt[3]{2 \cdot 2^3 \cdot y^3} = 2y \sqrt[3]{2} \quad \checkmark$$

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$$1^4 = 1 \cdot 1 \cdot 1 \cdot 1 = 1$$

$$5. 3\sqrt[3]{56y^6z^5}$$

$$3 \cdot \sqrt[3]{7 \cdot 2^3 \cdot y^6 \cdot z^3 \cdot z^2}$$

$$3 \cdot 2 \cdot y^2 \cdot z \sqrt[3]{7z^2}$$

$$6y^2z \sqrt[3]{7z^2} \checkmark$$

$$6. \sqrt[4]{\frac{1}{81}c^{10}d^7}$$

$$\sqrt[4]{\frac{1^4}{3^4} \cdot c^8 \cdot c^2 \cdot d^4 \cdot d^3}$$

$$\frac{1}{3}c^2d \sqrt[4]{c^2d^3} \checkmark$$

Quotient Property of Radicals