

## LT #2: Multiplying & Dividing Radicals

Simplify the following expressions. Assume variables represent positive numbers only. Rationalize the denominator if necessary. (3 pts each)

$$1. \sqrt[3]{9x^4y^2} \cdot \sqrt[3]{9x^7y^2z}$$

$$2. \frac{\sqrt[4]{32x^9y^5z^8}}{\sqrt[4]{2yz^2}}$$

$$\begin{array}{l} 81 \\ \swarrow \quad \searrow \\ 9 \quad 9 \\ \swarrow \quad \searrow \\ 3 \quad 3 \end{array} \quad \sqrt[3]{81x^{11}y^4z}$$

$$\sqrt[4]{16x^9y^4z^6}$$

$$\begin{array}{l} 16 \\ \wedge \\ 2 \\ \wedge \\ 8 \\ \wedge \\ 2 \quad 4 \\ \wedge \\ 2 \quad 2 \end{array}$$

$$\sqrt[3]{(3 \cdot 3 \cdot 3)3x^{11}y^4z}$$

$$\sqrt[4]{(2 \cdot 2 \cdot 2 \cdot 2)x^9y^4z^6}$$

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

$$\frac{\sqrt[3]{20xy}}{\sqrt[3]{2 \cdot 2 \cdot 2y^3}} = \frac{\sqrt[3]{20xy}}{2y}$$

$$1. \frac{3x^3y \sqrt[3]{3x^2yz}}{\sqrt[3]{3x^2yz}}$$

$$2. \frac{2x^7yz \sqrt[4]{xz^2}}{\sqrt[4]{xz^2}}$$

$$3. \frac{\sqrt[3]{20xy}}{2y}$$

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## LT #3: Binomial Radical Expressions

Simplify the following expressions. (2 pts each)

$$1. \sqrt{48} + 2\sqrt{18} - 3\sqrt{27}$$

$$2. (2 + 3\sqrt{2})(5 - 4\sqrt{2})$$

$$4\sqrt{3} + 2 \cdot 3\sqrt{2} - 3 \cdot 3\sqrt{3}$$

$$10 - 8\sqrt{2} + 15\sqrt{2} - 12\sqrt{4}$$

$$4\sqrt{3} + 6\sqrt{2} - 9\sqrt{3}$$

$$10 + 7\sqrt{2} - 12(2)$$

$$10 + 7\sqrt{2} - 24$$

$$3. (1 - \sqrt{6}) - (3 + 7\sqrt{6})$$

$$4. \frac{5}{(3+\sqrt{5})(3-\sqrt{5})} (3-\sqrt{5})$$

$$1 - \sqrt{6} - 3 - 7\sqrt{6}$$

$$\frac{15 - 5\sqrt{5}}{9 - \sqrt{25}}$$

$$1. \frac{-5\sqrt{3} + 6\sqrt{2}}{\sqrt{3} + \sqrt{2}}$$

$$2. \frac{-14 + 7\sqrt{2}}{\sqrt{2}}$$

$$3. \frac{-2 - 8\sqrt{6}}{\sqrt{6}}$$

$$4. \frac{15 - 5\sqrt{5}}{4}$$

$$\frac{15 - 5\sqrt{5}}{9 - 5} = \frac{15 - 5\sqrt{5}}{4}$$

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