

SHOW ALL WORK!

Evaluate.

$$1. \sqrt{200} = 10\sqrt{2}$$

$$\begin{array}{c} 2 \wedge 100 \\ 2 \wedge 50 \\ 2 \wedge 25 \\ 5 \wedge 5 \end{array}$$

$$2. \sqrt[3]{500} = 5\sqrt[3]{4}$$

$$\begin{array}{c} 5 \wedge 100 \\ 10 \wedge 10 \\ 2 \wedge 5 \quad 2 \wedge 5 \end{array}$$

$$3. \sqrt[4]{32} = 2\sqrt[4]{2}$$

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

Simplify completely.

$$4. \sqrt{64x^8y^2} = 8x^4y$$

$$5. \sqrt[3]{x} \cdot \sqrt[3]{y} = \sqrt[3]{xy}$$

$$6. \sqrt[4]{xy^3} = \sqrt[2]{xy^3}$$

$$7. 4\sqrt{7} + 5\sqrt{7} = 9\sqrt{7}$$

$$8. \underline{5\sqrt[3]{xy}} + 2\sqrt{xy} - \underline{\sqrt[3]{xy}} + \sqrt{xy}$$

$$4\sqrt[3]{xy} + 3\sqrt{xy}$$

$$9. \frac{\sqrt[4]{80r^{10}s^{21}}}{2rs} = \frac{2r^2s^5 \sqrt[4]{5r^2s}}{2rs} = rs^4 \sqrt[4]{5r^2s}$$

$$\begin{array}{c} 80 \\ 2 \wedge 40 \\ 2 \wedge 20 \\ 2 \wedge 10 \\ 2 \wedge 5 \end{array}$$

$r^{10} \rightarrow 2$ sets of 4

$s^{21} \rightarrow 5$ sets of 4

Rationalize the denominator. Be sure to reduce the fraction completely.

$$10. \frac{6}{\sqrt{3x}} \cdot \frac{\sqrt{3x}}{\sqrt{3x}} = \frac{6\sqrt{3x}}{3x}$$
$$= \frac{2\sqrt{3x}}{x}$$

$$11. \frac{3}{\sqrt[3]{54}} \cdot \frac{\sqrt[3]{2}}{3\sqrt[3]{2}} \cdot \frac{\sqrt[3]{4}}{\sqrt[3]{4}} = \frac{\sqrt[3]{4}}{2}$$

$$12. \frac{3+\sqrt{2}}{3-\sqrt{2}} \cdot \frac{3+\sqrt{2}}{3+\sqrt{2}} = \frac{9+6\sqrt{2}+2}{9-2}$$
$$= \frac{11+6\sqrt{2}}{7}$$

$$13. \frac{5}{\sqrt{7}-2} \cdot \frac{\sqrt{7}+2}{\sqrt{7}+2} = \frac{5\sqrt{7}+10}{7-4}$$
$$= \frac{5\sqrt{7}+10}{3}$$