

1. Write as entire radicals. State the restrictions on the variables.

a) $4\sqrt{5}$

b) $2\sqrt[3]{7}$

c) $3a\sqrt{5a}$

2. Simplify. State the restrictions on the variables.

a) $\sqrt{81x^5}$

b) $\sqrt{175x^2y^3}$

c) $\sqrt[3]{8x^5y}$

3. Order the radicals 5 , $3\sqrt{3}$, $2\sqrt{6}$, $\sqrt{26}$ from least to greatest without using a calculator.

4. Simplify. State the restrictions on the variables.

a) $\sqrt{63} + \sqrt{75} - 2\sqrt{28} - 3\sqrt{27}$

b) $\sqrt[3]{5} - \sqrt[3]{625}$

c) $3\sqrt{32n} + 4\sqrt{162n}$

5. Simplify. State any restrictions on the variables.

a) $\sqrt{15}(3\sqrt{5} - \sqrt{3})$

b) $(6\sqrt{5})(2\sqrt{3})$

c) $(1 + \sqrt{3})(3 + \sqrt{3})$

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c) $(1 + \sqrt{3})(3 + \sqrt{3})$

d) $(2 - \sqrt{5})^2$

e) $9\sqrt[3]{2w}(\sqrt[3]{4w} + 7\sqrt[3]{28})$

f) $\frac{\sqrt[3]{54m^{10}}}{3\sqrt[3]{m^2}}$

6. Rationalize each denominator. Simplify completely. State any restrictions on the variables.

a) $\frac{\sqrt{10}}{\sqrt{3}}$

b) $\frac{6\sqrt{2} + 2\sqrt{6}}{3\sqrt{6}}$

c) $\frac{\sqrt{45x^3}}{\sqrt{5x^7}}$

Answers

1. a) $\sqrt{80}$

b) $\sqrt[3]{56}$

c) $\sqrt{45a^3}, a \geq 0$

2. a) $9x^2\sqrt{x}, x \geq 0$

b) $5xy\sqrt{7y}, x \geq 0, y \geq 0$

c) $2x\sqrt[3]{x^2y}, x \in \mathbb{R}, y \in \mathbb{R}$

3. $2\sqrt{6}, 5, \sqrt{26}, 3\sqrt{3}$

4. a) $-\sqrt{7} - 4\sqrt{3}$

b) $-4\sqrt[3]{5}$

c) $\sqrt{48n}, n \geq 0$

5. a) $15\sqrt{3} - 3\sqrt{5}$

b) $12\sqrt{15}$

c) $6 + 4\sqrt{3}$

d) $9 - 8\sqrt{5}$

e) $18\sqrt[3]{w^2} + 126\sqrt[3]{7w}, w \in \mathbb{R}$

f) $m^2\sqrt[3]{2m^2}, m \neq 0$

6. a) $\frac{\sqrt{30}}{3}$

b) $\frac{2 + 2\sqrt{3}}{3}$

c) $\frac{3}{x^2}, x > 0$

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