PC 11

5.1 Part 1 Simplifying Radicals

Name_____ Date: _____ Block_____

1. Simplify

a. $3\sqrt{25}$ b. $\sqrt{\frac{16}{9}}$ c. $\sqrt[3]{8}$ d. $5\sqrt[3]{27}$ e. $-\sqrt[4]{81}$

2. Write in simplest radical form.

a. $\sqrt{8}$ b. $\sqrt{45}$ c. $\sqrt{112}$ d. $-10\sqrt{12}$

e. $\frac{2}{3}\sqrt{72}$ f. $\sqrt[3]{54}$ g. $-5\sqrt[3]{-27}$ h. $7\sqrt[4]{80}$

3. Write each expression in simplest radical form.

a. $\sqrt{25x^2}$ b. $\sqrt{x^7}$ c. $\sqrt{xy^5}$ d. $\sqrt[3]{x^3}$

e. $\sqrt{24x^7y}$ f. $\sqrt{\frac{4x}{9y^2}}$ g. $\sqrt[3]{8x^4y^2}$ h. $-2\sqrt[5]{96x^5y^6}$

4. Write as an entire radical.

a. $2\sqrt{5}$ b. $-3\sqrt{7}$ c. $\frac{2}{3}\sqrt{5}$ d. $2\sqrt[3]{3}$

e. $-4\sqrt[3]{7}$ f. $\frac{2}{5}\sqrt[3]{7}$ g. $2\sqrt[4]{3}$ h. $-2\sqrt[5]{3}$

5. Write as an entire radical.

a. $x\sqrt{y}$ b. $xy\sqrt{x}$ c. $2xy^2\sqrt{x}$ d. $-3x^5\sqrt{xy}$

e. $x^2\sqrt[3]{x}$ f. $2x\sqrt[4]{y}$ g. $\frac{1}{2x}\sqrt{3x}$ h. $\frac{-\sqrt[3]{2x}}{y^2}$

6. Order each set of numbers from least to greatest.

a. 24, $3\sqrt{2}$, $2\sqrt{5}$ b. $-2\sqrt{5}$, $3\sqrt{7}$, $-3\sqrt{2}$, $5\sqrt{3}$

7. Identify the restrictions on the variables.

a. $3\sqrt{2a}$ b. $\sqrt{x+9}$ c. $\sqrt{x-12}$ d. $\sqrt{5z-3}$

e) $\sqrt{-3z+2}$ f. $3\sqrt{y^2}$ g. $\sqrt[3]{8y}$ h. Simplify first , then determine the restriction. $-2\sqrt{x^5y^2}$

8a. A square has an area of 48 cm^2. Determine the side length of the square.

b. Determine the length of the diagonal of the square.

9. A cube as a volume of 128 cm^3. What is the length of each side?

Answers:

1a. 15 b. $\frac{4}{3}$ c. 2 d. 15 e. -3 2a. $2\sqrt{2}$ b. $3\sqrt{5}$ c. $4\sqrt{7}$ d. $-20\sqrt{3}$ e. $4\sqrt{2}$ f. $3\sqrt[3]{2}$ g. 15 h. $14\sqrt[4]{5}$
3a. $5x$ b. $x^3\sqrt{x}$ c. $y^2\sqrt{xy}$ d. x e. $2x^3\sqrt{6xy}$ f. $\frac{2}{3y}\sqrt{x}$ g. $2x\sqrt[3]{xy^2}$ h. $-4xy\sqrt[5]{3y}$
4a. $\sqrt{20}$ b. $-\sqrt{63}$ c. $\sqrt{\frac{20}{9}}$ d. $\sqrt[3]{24}$ e. $-\sqrt[3]{448}$ f. $\sqrt[3]{\frac{56}{125}}$ g. $\sqrt[4]{48}$ h. $-\sqrt[5]{96}$
5a. $\sqrt{x^2y}$ b. $\sqrt{x^3y^2}$ c. $\sqrt{4x^3y^4}$ d. $-\sqrt{9x^{11}y}$ e. $\sqrt[3]{x^7}$ f. $\sqrt[4]{16x^4y}$ g. $\sqrt{\frac{3}{4x}}$ h $-\sqrt[3]{\frac{2x}{y^6}}$
6a. $3\sqrt{2}, 2\sqrt{5}, 24$ b. $-2\sqrt{5}, -3\sqrt{2}, 3\sqrt{7}, 5\sqrt{3}$ 7a. $a \geq 0$ b. $x \geq -9$ c. $x \geq 12$ d. $z \geq \frac{3}{5}$
7e. $z \leq \frac{2}{3}$ f. no restrictions g. no restrictions h. $x \geq 0$ 8a. $4\sqrt{3}$ cm b. $4\sqrt{6}$ 9. $4\sqrt[3]{2}$