Name: Date: Period:

# Practice LG 4.2: Simplifying Radicals

Fully simplify the following radical expressions

a) $\sqrt{a^{10}b^{15}c^{11}}$

Remember, if no index is shown, assume that it is 2

$\sqrt[2]{a^{10}b^{15}c^{11}}$

$a^{\frac{10}{2}}\ b^{\frac{15}{2}}\ c^{\frac{11}{2}}$

5R0 7R1 5R1

$a^5 b^7 c^5 \sqrt{bc}$

b) $\sqrt[3]{\frac{b^9}{b^{-5}}} = \sqrt[3]{b^{14}}$

$= b^{14/3}$

4R2

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

c) $\sqrt[3]{24y^{10}}$

$\sqrt[3]{2^3 \cdot 3^1 y^{10}}$

$2^{3/3}\ 3^{1/3}\ y^{10/3}$

1R0 0R1 3R1

$2^1 y^3 \sqrt[3]{3y^1}$

24
/ \
8 3
/ \
2 2 2

$2^3 \cdot 3$

d) $\sqrt[3]{b^3} \cdot \sqrt[3]{8b^8} =$

$\sqrt[3]{8b^{11}}$

$\sqrt[3]{2^3 b^{11}} =$

$2^{3/3}\ b^{11/3}$

1R0 3R2

$2^1 b^3 \sqrt[3]{b^2}$

e) $\sqrt{a^5b^9c^6}$

$5/2 \quad 9/2 \quad 6/2$

$a \quad b \quad c$

$2R1 \quad 4R1 \quad 3R0$

$a^2b^4c^3\sqrt{ab}$

f) $\sqrt[5]{\frac{b^{10}}{b^{-8}}} = \sqrt[5]{\frac{b^{10}\cdot b^8}{1}}$

$= \sqrt[5]{b^{18}}$

$18/5 \qquad \frac{18}{5} = 3R3$

$= b^{18/5}$

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

g) $\sqrt[3]{27x^6y^8}$

$\sqrt[3]{3^3x^6y^8}$

$3/3 \quad 6/3 \quad 8/3$

$3 \quad x \quad y$

$1R0 \quad 2R0 \quad 2R2$

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

27 → 9, 3 → 3, 3

h) $\sqrt[4]{2b^3}\cdot\sqrt[4]{8b^5} = \sqrt[4]{16b^8}$

16 → $2^4$

$\sqrt[4]{2^4b^8}$

$4/4 \quad 8/4$

$2^1b^2$