Intermediate Algebra B *Name* Key

Reteach 7.2: Roots, Radicals & Equations ***Hour 1 2 3 4 5***

7.2 ***I can demonstrate understanding of radical expressions and expressions with rational exponents.***

Level 1:

1. Simplify. Leave your answer in rational exponent form.

a. $\sqrt[3]{27x^9y^3}$

$(27x^9y^3)^{\frac{1}{3}}$

$27^{\frac{1}{3}}\ x^{9\cdot\frac{1}{3}}\ y^{3\cdot\frac{1}{3}}$

$3x^3y$

b. $\sqrt{25x^8y^{16}}$

$(25x^8y^{16})^{\frac{1}{2}}$

$25^{\frac{1}{2}}\ x^{8\cdot\frac{1}{2}}\ y^{16\cdot\frac{1}{2}}$

$5x^4y^8$

2. Simplify. Leave your answer in rational exponent form.

a. $(36x^8y^6)^{\frac{1}{2}}$

$36^{\frac{1}{2}}\ x^{8\cdot\frac{1}{2}}\ y^{6\cdot\frac{1}{2}}$

$6x^4y^3$

b. $(27a^9b^{15})^{\frac{2}{3}}$

$27^{\frac{2}{3}}\ a^{9\cdot\frac{2}{3}}\ b^{15\cdot\frac{2}{3}}$

$9a^6b^{10}$

3. Simplify. Write your answer in radical form.

a. $x^{\frac{2}{3}} \cdot x^{\frac{6}{3}}$

$x^{\frac{2}{3}+\frac{6}{3}} = x^{\frac{8}{3}} = \sqrt[3]{x^8}$

b. $\dfrac{a^{\frac{3}{2}}}{a^{\frac{1}{6}}}$

$a^{\frac{3}{2}-\frac{1}{6}} = a^{\frac{8}{6}} = \sqrt[6]{a^8}$

$\sqrt[6]{a^8}$

4. Simplify. Write your answer in radical form.

a. $\left(a^{\frac{1}{4}} \cdot a^{\frac{3}{2}}\right)^{\frac{3}{2}}$

$a^{\frac{1}{4}+\frac{3}{2}}$

$\left(a^{\frac{7}{4}}\right)^{\frac{3}{2}}\ a^{\frac{21}{8}}$ $\sqrt[8]{a^{21}}$

b. $\left(\dfrac{x^{\frac{2}{3}}}{x^{\frac{2}{5}}}\right)^{\frac{1}{3}}$ $x^{\frac{4}{45}}$

$x^{\frac{2}{3}-\frac{2}{5}} = x^{\frac{4}{15}\cdot\frac{1}{3}} = \sqrt[45]{x^4}$

5. Simplify. Leave your answer in rational exponent form.

a. $\left(x^3y^{\frac{2}{3}}\right)\left(x^{\frac{1}{2}}y\right)$

$x^{\frac{7}{2}}\ y^{\frac{5}{3}}$

b. $\left(x^{\frac{3}{4}}y^{\frac{1}{3}}\right)\left(x^{\frac{1}{3}}y^{\frac{2}{3}}\right)$

$x^{\frac{13}{12}}\ y^{1}$

Intermediate Algebra B *Name* _____

Reteach 7.2: Roots, Radicals & Equations *Hour 1 2 3 4 5*

7.2	*I can demonstrate understanding of radical expressions and expressions with rational exponents.*

Level 1:

6. Write the expressions in rational exponent form.

a. $\sqrt{x}$ $x^{\frac{1}{2}}$

b. $\sqrt[3]{y^7}$ $y^{\frac{7}{3}}$

7. Write the expressions in radical form.

b. $x^{\frac{3}{7}}$ $\sqrt[7]{x^3}$

b. $y^{\frac{7}{3}}$ $\sqrt[3]{y^7}$

Level 2/3:

Simplify completely.

8. $\sqrt[3]{\frac{-8x^3y^{12}}{x^3y^{15}}}$ $\left(\frac{-8x^3y^{12}}{x^3y^{15}}\right)^{\frac{1}{3}}$ $\left(\frac{-8}{y^3}\right)^{\frac{1}{3}}$ $\frac{-2}{y}$

9. $\frac{16x^{\frac{2}{3}}y^{\frac{1}{2}}}{4x^{\frac{4}{5}}y^{\frac{-2}{3}}}$ $\frac{4y^{\frac{7}{6}}}{x^{\frac{2}{15}}}$

10. $\left(x^3y^{\frac{2}{3}}\right)^{\frac{4}{5}}\left(x^{\frac{1}{2}}y^{\frac{1}{5}}\right)$

$x^{\frac{12}{5}}y^{\frac{8}{15}}x^{\frac{1}{2}}y^{\frac{1}{5}}$

$x^{\frac{29}{10}}y^{\frac{11}{15}}$