Date: _____

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) simplify algebraic expressions containing rational exponents and radicals.

p. 230

Last day's work: **READ p.228**

pp. 229-230 #(1 – 6)ace, 8 – 11, 12ace, 14 [16]

12. Evaluate.

a) $-256^{0.375}$

$= -256^{\frac{375}{1000}}$

$= -256^{\frac{15}{40}}$

$= -256^{\frac{3}{8}}$

$= -\left(\sqrt[8]{256}\right)^3$

$= -(2)^3$

$= -8$

4.4 Simplifying Algebraic Expressions Involving Exponents

Date: Apr. 6/18

Ex.1 Simplify. Express answers in rational form with positive exponents.

a) $\dfrac{\left(3x^{-2}y^{2}\right)^{2}}{\left(x^{3}y^{-2}\right)^{3}}$

Recall: $(ab)^{n} = a^{n}b^{n}$

$= \dfrac{(3)^{2}(x^{-2})^{2}(y^{2})^{2}}{(x^{3})^{3}(y^{-2})^{3}}$

$= \dfrac{9x^{-4}y^{4}}{x^{9}y^{-6}}$

$= 9x^{-4-9}y^{4-(-6)}$

$= 9x^{-13}y^{10}$

$= \dfrac{9y^{10}}{x^{13}}$

$\dfrac{9y^{10}}{x^{13}}$

b) $\dfrac{\left(64a^{-6}b^{12}\right)^{\frac{1}{3}}}{\left(16a^{-4}b^{6}\right)^{\frac{1}{2}}}$

$= \dfrac{64^{\frac{1}{3}}(a^{-6})^{\frac{1}{3}}(b^{12})^{\frac{1}{3}}}{16^{\frac{1}{2}}(a^{-4})^{\frac{1}{2}}(b^{6})^{\frac{1}{2}}}$

$= \dfrac{\sqrt[3]{64}\,a^{-2}b^{4}}{\sqrt{16}\,a^{-2}b^{3}}$

$= \dfrac{4}{4}a^{-2-(-2)}b^{4-3}$

$= 1a^{0}b$

$= b$

b

c) $\dfrac{b^{-4}}{a^{-2}}$

$= \dfrac{a^{2}}{b^{4}}$

$\dfrac{a^{2}}{b^{4}}$

d) $\dfrac{\sqrt[6]{x^{8}}}{\sqrt[3]{x^{5}}}$

$= \dfrac{x^{\frac{8}{6}}}{x^{\frac{5}{3}}}$ $x^{8} \div x^{3}$

$= x^{\frac{4}{3}} \div x^{\frac{5}{3}}$

$= x^{\frac{4}{3}-\frac{5}{3}}$

$= x^{-\frac{1}{3}}$

$= \dfrac{1}{x^{\frac{1}{3}}}$

$\dfrac{1}{x^{\frac{1}{3}}}$

Simplify.

$$\frac{a^2 b^{-1} c^{-3} d^5}{e^{-6} f^2 g^{-1} h^{-7}}$$

$$= \frac{a^2 e^6 g h^7 d^5}{b f^2 c^3}$$

Ex.2 Simplify and evaluate for $x = -3$ and $n = -2$.

$$\frac{\left(x^{3n+1}\right)\left(x^{5n-3}\right)}{\left(x^{6n-3}\right)}$$

$= x^{3n+1+(5n-3)-(6n-3)}$

$= x^{3n+1+5n-3-6n+3}$

$= x^{2n+1}$

$= (-3)^{2(-2)+1}$

$= (-3)^{-4+1}$

$= (-3)^{-3}$

$= \frac{1}{(-3)^3}$

$= \frac{1}{-27}$

$$\frac{-1}{27}$$

Extra, if time.

$$\left(\frac{\left(x^{18}\right)^{-\frac{1}{6}}}{\sqrt[5]{243x^{10}}}\right)^{0.5}$$

$$= \left(\frac{x^{-3}}{3x^{\frac{10}{3}}}\right)^{\frac{1}{2}}$$

$$= \left(\frac{x^{-3}}{3x^{2}}\right)^{\frac{1}{2}}$$

$$= \left(\frac{1}{3x^{2}\cdot x^{3}}\right)^{\frac{1}{2}}$$

$$= \left(\frac{1}{3x^{5}}\right)^{\frac{1}{2}}$$

$$= \frac{1}{\sqrt{3x^{5}}}$$

$$\frac{1}{\sqrt{3x^{5}}}$$

Are there any Homework Questions you would like to see on the board?

Last day's work: **READ p.228**

pp. 229-230 #(1 – 6)ace, 8 – 11, 12ace, 14 [16]

The mid-chapter review is good practice for Monday's quiz!

SWYK Monday

Today's Homework Practice includes:

pp. 235-237 #(1 – 2)ace, 3, (4 – 9)ace [14]

Review p. 239