MATH 0482
Chapter 5.5 Rational Expressions

$a^{\frac{1}{N}}$

REWRITE AS A RADICAL. $6^{\frac{1}{2}}$ $6^{\frac{1}{3}}$

REWRITE AND SIMPLIFY.

$16^{\frac{1}{2}}$ $16^{\frac{1}{4}}$ $(64x^3)^{\frac{1}{3}}$ $(-32x^5y^{10})^{\frac{1}{5}}$

$a^{\frac{M}{N}}$

REWRITE AS A RADICAL. $6^{\frac{2}{5}}$ $3^{\frac{3}{4}}$

REWRITE AND SIMPLIFY.

$27^{\frac{2}{3}}$ $12^{\frac{5}{3}}$ $(-8)^{\frac{2}{3}}$

REWRITE USING RATIONAL EXPONENTS.

$\sqrt[5]{x^3}$ $\sqrt[6]{y^3}$

Operations Using the Rules of Exponents

PRODUCT: $x^m \cdot x^N = x^{M+N}$

QUOTIENT: $\frac{x^M}{x^N} = x^{M-N} \quad x \neq 0$

POWER: $(x^M)^N = x^{MN} \quad (xy)^N = x^N y^N \quad \left(\frac{x}{y}\right)^N = \frac{x^N}{y^N} \quad y \neq 0$

NEGATIVE: $x^{-N} = \frac{1}{x^N}$

ZERO: $x^0 = 1 \quad x \neq 0$

Simplify.

$7^{\frac{1}{3}} \cdot 7^{\frac{4}{9}}$

$\frac{x^{3/2}}{x^{2/3}}$

$(y^{\frac{3}{4}})^{\frac{2}{3}}$

$(81a^{8}b^{12})^{\frac{3}{4}}$

$(9x^{4})^{-\frac{3}{2}}$

$\sqrt{2}\cdot\sqrt[3]{2}$

$$\frac{\sqrt[3]{4}}{\sqrt[5]{2}}$$

$$\sqrt{\sqrt[3]{4}}$$