Warm Up

1. $\sqrt{54x^3y^2}$ $3xy\sqrt{6x}$

2. $\frac{4x^5y^{-3}}{4x^8y^2}$ $\frac{1}{x^3y^5}$ $\frac{1x^5}{x^5y^2y^3} = \frac{1}{x^3y^5}$

1-4 Rational Exponents

Reduce Assuming all variables are greater then or equal to zero.

(You can either do these using rational exponents or not.)

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

$x \cdot x \cdot x \cdot x \cdot x \cdot x$

$x^{6/2} =$

$\sqrt[3]{x^{12}} = x^{12/3}$

Rational exponent Calc task

$1, 4, 9, 16, 25, 36$

$$a^{\left(\frac{1}{2}\right)} = \sqrt[2]{a^1}$$

$1^{1/2} = \sqrt[2]{1^1}$ $\quad 9^{1/2} = \sqrt[2]{9^1}$

$4^{1/2} = \sqrt[2]{4^1}$ $\quad 16^{1/2} = \sqrt[2]{16^1}$

1, 8, 27, 64, 125, 216

$a^{\frac{2}{3}} = \sqrt[3]{a^2}$

$$a^{\left(\frac{m}{n}\right)} = \sqrt[n]{a^m}$$

Write each of the following as a radical.

$9^{\frac{1}{2}} = \sqrt{9}$

$(-64)^{\frac{1}{3}}$

$\sqrt[3]{(-64)^1}$

$100^{\frac{1}{2}} = \sqrt{100}$

$-100^{\frac{1}{2}} = -\sqrt{100}$

$z^{\frac{1}{2}}$

$\sqrt{z}$

Write each of the following as a rational exponent.

$\left(\sqrt[5]{x}\right)^7 = (x)^{\frac{7}{5}}$

$\left(\sqrt[4]{7x}\right)^5 = (7x)^{\frac{5}{4}}$

$\left(\sqrt[6]{2x}\right)^5 = (2x)^{\frac{5}{6}}$

$\sqrt[3]{4x^2} = (4x^2)^{\frac{1}{3}}$

Simplify the following

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

$(8x^6)^{\frac{1}{3}}$

$8^{\frac{1}{3}} x^{\frac{6}{1}\cdot\frac{1}{3}}$

$8^{\frac{1}{3}} x^{\frac{6}{3}}$

$2x^2$

$(125x^6)^{\frac{5}{3}}$

$125^{\frac{5}{3}} x^{\frac{30}{3}}$

$3125x^{10}$