

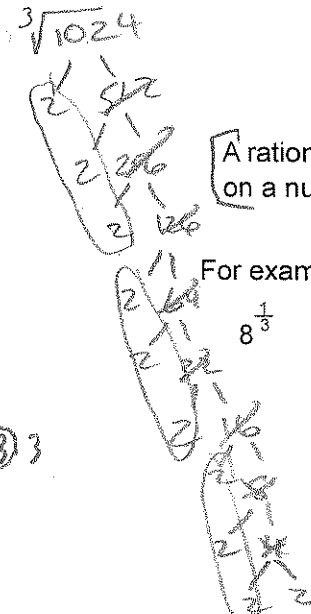
Simplify each.

1.  $\sqrt[3]{96}$

2.  $\sqrt[3]{4^5}$   
 $8\sqrt[3]{2}$

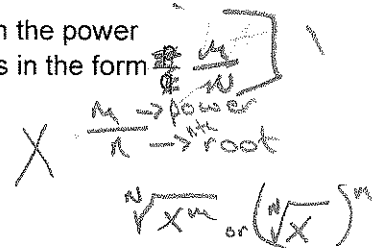
3.  $\sqrt[5]{(-2)^6}$   
 $2\sqrt[5]{8}$   
 $\sqrt[5]{2^6}$   
 $\sqrt[5]{2^5 \cdot 2}$   
 $2\sqrt[5]{2}$

4.  $\sqrt[6]{3^7}$   
 $3, 3, 3, 3, 3, 3, 3$   
 $3^6 \sqrt[6]{3}$



Rational Exponents

A rational exponent is when the power on a number (or variable) is in the form



For example:

$8^{\frac{1}{3}}$        $x^{\frac{5}{4}}$

\* A rational exponent is the inverse of a radical expression.

$$x^{\frac{m}{n}} = \sqrt[n]{x^m} = (\sqrt[n]{x})^m$$

Write each rational exponent as a radical. Then simplify.

1.  $(-3)^{\frac{4}{3}}$   
 $\sqrt[3]{(-3)^4}$        $\sqrt[3]{81}$   
 $\sqrt[3]{3^4}$

2.  $5^{\frac{3}{2}}$   
 $5\sqrt{5}$   
 $\sqrt{5^3}$   
 $\sqrt{125}$   
 $5\sqrt{5}$

3.  $2^{\frac{6}{5}}$

4.  ~~$(-4)^{\frac{6}{4}}$~~

$\sqrt[5]{2^6}$   
 $2\sqrt[5]{2}$

Write each radical as a rational exponent.

$\sqrt[5]{32}$   
 $32^{\frac{1}{5}}$

$\sqrt[7]{(2)^7}$   
 $(2)^{\frac{7}{7}}$

$\sqrt[3]{(-4)^2}$   
 $(-4)^{\frac{2}{3}}$

$(\sqrt[3]{9})^3$   
 $9^{\frac{3}{3}}$

$\sqrt[3]{4^5}$   
 $4, 4, 4$   
 $2, 2, 2$   
 $4 \cdot 2 \sqrt[3]{2} = 8\sqrt[3]{2}$

Daily Practice

Rational Exponents WS