

1/15/13 Rational Exponents Part 2

Write in Exponential form

Ex

①  $\sqrt[3]{p^4 q^2}$   
 $(p^4 q^2)^{1/3}$   
 $p^{4/3} q^{2/3}$

②  $\sqrt[3]{x^6 y^{-4}}$   
 $(x^6 y^{-4})^{1/3}$   
 $x^{6/3} y^{-4/3}$   
 $x^2 y^{-4/3}$

③  $(\sqrt{8b^6c^{-4}})^3$   
 $(\sqrt[2]{8b^6c^{-4}})^3$   
 $(8b^6c^{-4})^{3/2}$   
 $8^{3/2} b^{18/2} c^{-12/2}$   
 $8^{3/2} b^9 c^{-6}$   
 $\frac{8^{3/2} b^9}{c^6}$

Use the Rules for fractional exp. to go backwards.

Express in Simplest Radical form

Ex

④  $\frac{\sqrt[5]{27^3}}{\sqrt[5]{9^2}}$   
 $\frac{\sqrt[5]{(3^3)^3}}{\sqrt[5]{(3^2)^2}}$

$\sqrt[5]{3^9}$   
 $\sqrt[5]{3^4}$   
 $\frac{3^{9/5}}{3^{4/5}}$

$3^{9/5 - 4/5}$   
 $3^{5/5}$   
 $3^1$   
 $\boxed{3}$

⑤  $\sqrt[6]{8^3} \div \sqrt[6]{4^2}$   
 $\sqrt[6]{(2^3)^3} \div \sqrt[6]{(2^2)^2}$   
 $\frac{\sqrt[6]{2^9}}{\sqrt[6]{2^4}} = \frac{2^{9/6}}{2^{4/6}} = 2^{9/6 - 4/6} = 2^{5/6}$   
 $= \sqrt[6]{2^5}$   
 $= \boxed{\sqrt[6]{32}}$

Simplify, write in exponential form.

⑥  $\sqrt[3]{a^2} \cdot \sqrt[3]{a^4}$   
 $a^{2/3} \cdot a^{4/3}$   
 $a^{2/3 + 4/3}$   
 $a^{6/3}$   
 $a^2$

- ① Write using a common base
- ② Write using fractional Exponents
- ③ Simplify
- ④ re-write using radicals