

**Goals:**

- I can write expressions with rational exponents in radical form and vice versa.
- I can simplify expressions in exponential or radical form.

Name: \_\_\_\_\_

Algebra II  
Rational Exponents Notes**Rational Exponents and Radicals**

Example 1: Simplify.

a.  $x^{\frac{1}{6}} = \sqrt[6]{x^1} = \sqrt[6]{x}$

c.  $\sqrt[4]{z^3} = z^{\frac{3}{4}}$

b.  $a^{\frac{1}{5}} = \sqrt[5]{a}$

d.  $\sqrt[7]{b^3} = b^{\frac{3}{7}}$

**\*NEGATIVE EXPONENTS\***

If an exponent is negative then moving that term from numerator to denominator or vice versa makes that exponent positive.

Example 2: Simplify

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

c.  $\frac{1}{y^{-4}} = y^4$

b.  $z^{-3} = \frac{1}{z^3}$

d.  $\frac{1}{a^{-2}} = a^2$

Example 3: Evaluate each expression. (**Evaluate means the answer should be a number**)

a.  $16^{\frac{3}{2}}$

b.  $81^{-\frac{1}{4}}$

Example 4: Simplify Expressions and Rational Exponents (**Simplify means there will still be numbers and letters in the final answer**)

a.  $a^{\frac{2}{7}} \cdot a^{\frac{4}{7}}$

b.  $p^{\frac{1}{4}} \cdot p^{\frac{9}{4}}$