Secondary 2
lesson 1.2

Power Rules

Objective:

By the end of the lesson you will be able to:

- Understand and correctly use Power Rules for multiplying and dividing to simplify monomials
- Understand how to work with negative exponents
- Know the value of anything^0

Rule #1: Product of Powers

$$a^m \cdot a^n = a^m$$

When multiplying two monomials with the same base you ADD the exponents.

Examples: 1) $(4^2)(4^3) = ?$ **2)** $\boldsymbol{x^{\frac{1}{2}}x^{\frac{3}{2}}}$ **=?**

Rule #2: Power of a Power

$$(a^m)^n = a^{mn}$$

When taking the *power of a power*, you *MULTIPLY* the exponents.

Examples: 3) $(4^2)^3 = ?$

4) $(x^4)^{\frac{3}{2}} = ?$

Rule #3: Power of a Product

$$(ab)^m = a^n$$

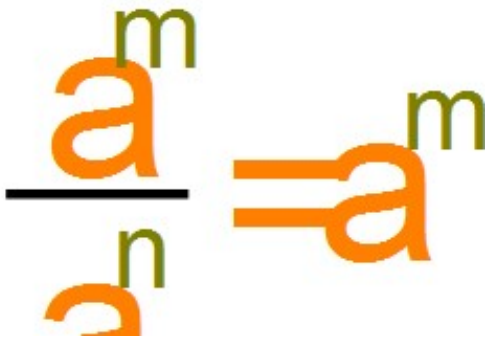
When taking the power of a product, you put the power to all elements in the product.

Examples:

5) $\left(\boldsymbol{2x^2}\right)^{\boldsymbol{3}}$

6) $\left(2x^{\frac{1}{3}}y\right)^3$

Rule #4: Quotient of Powers

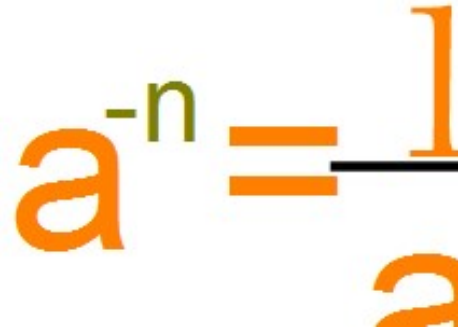


When *dividing* two monomials with the same base you *SUBTRAC*T the exponents.

7) $\dfrac{x^6}{x^3}$

8) $\left(\dfrac{8x^6}{2x^2}\right)^{\frac{1}{2}}$

Rule #5 Negative Exponents



When dealing with negative exponents, move the element with the negative exponent to the opposite side of the fraction bar. (numbers with negative exponents on top go to the bottom, numbers with negative exponents on the bottom go to the top.)

*When you simplify a problem, you can not have a negative exponent when you are done.

9) $\boldsymbol{x^{-6} = \frac{x^{-6}}{1} =}$

10) $\boldsymbol{\frac{1}{x^{-3}} =}$

Rule #6 Zero Exponent Rule

$$a^0 =$$

Any number, or variable, to the power of zero is equal to ***one***.

Examples: 11) $3^0 = ?$

12) $-15^0 = ?$

13) $(4x + 3)^0 = ?$

14) $anything^0 = ?$

Can You?:

Understand and correctly use Power Rules to simplify monomials

???

Assignment:

1.2 in the packet and MathXL 1.2

Due next class