Power Law Review

A power is made up of two parts: the base and the exponent. For example, in 3^2, 3 is the base and 2 is the exponent. Or in x^5, x is the base and 5 in the exponent.

Multiplying Powers

Rule: **When we multiply powers with the same base, we add the exponents and keep the base the same.**

Dividing Powers

Rule: **When we divide powers with the same base we subtract the exponents and keep the base the same.**

Examples: Simplify the power.

1. $(x^2)(x^4) =$

2. $x^3y^4x^2y^5 =$

3. $y^7y^4 =$

4. $x^4y^7xy^5 =$

Power of a Power Law

Rule: **When we have a power as the base of an exponent, we multiply the exponents together.**

Example: $(x^3)^4 = x^{12}$.

We need to realize that the above example is telling us that we have to multiply x^3 together 4 times, so if we add three together 4 times we get 12, or simply multiply 3 by 4 to get 12.
$(x^3)^4 = (x^3)(x^3)(x^3)(x^3) = x^{12}$

Also we need to remember that every factor in the bracket is raised to the exponent on the outside.

Examples: Simplify the powers.

1. $(x^2)^5 =$

2. $(x^2y^3)^3 =$

3. $(2y^3)^2 =$

Zero Power Law

Rule: **Anything to the power of zero is equal to 1.**

Example: $(1000000)^0=1$

Examples: Simplify the powers.

1. $(x)^0 =$

2. $(xyz)^0 =$

3. $(-50x^3)^0 =$

Negative Power Law

Rule: **When we have a negative exponent, we flip the base and make the exponent positive.**

Example: $(2)^{-4}=\left(\frac{1}{2}\right)^4$

Examples: Make the exponent positive

1. $(x)^{-3}=$

2. $(3y)^{-2}=$

3. $(2x^2y^{-1})^{-3} =$

Homework: Nelson Page 222 #s 4ace, 5bdf, 6bdf, 7ace & 8bdef