1.1 Exponent Rules

Date: _____

I can: use exponent rules to simplify expressions

The basic layout of an exponent is, for example:

x^2

What does an exponent mean?

Ex. 2^3 = Ex. $(-4)^4$ = Ex. 11^2 =

How are these all pronounced?

What if we were given questions that look like this?

Ex. $(2^3)(2^4)$ Ex. $(-3)^2(-3)^1$ Ex. $x^{-2}\ x^6$

We can generalize to create the Product Rule:

What if we switched to dividing exponents? What would change?

Ex. $2^5 \div 2^2$ Ex. $3^9 \div 3^{11}$ Ex. $(-4)^3 \div (-4)^3$

We can generalize to create the Quotient Rule:

Finally, what if we switched to an exponent of an exponent?

Ex. $(2^5)^2$ Ex. $[(-4)^3]^4$ Ex. $(11^3)^0$

We can generalize to create the Power of a Power Rule:

What all of these mini-examples have in common?

Ex. $(-2x^2y^3)(3x^3y^4)$ Ex. $(x^5y)(4x^2y^4)$ Ex. $\dfrac{(3x^2y^2)^3}{9x^5y^7}$

Ex. $\dfrac{-32x^2y^8 - 16x^2y^4 + 8x^2y}{8x^2y}$ Ex. $\dfrac{6x^3 + 12x^2 - 18x}{-3x}$

Evaluate the expression when x = 2 and y = -1.

Ex. $(-2x^2y^3)(3x^3y^4)$

Ex. $(x^5y)(4x^2y^4)$

Ex. $\frac{(3x^2y^2)^3}{9x^5y^7}$

Ex. $\frac{-33x^2y^{10} - 22xy^4}{-11xy}$