SM3-A: Properties 7-1 (exponents)

Multiply Powers Property: when you multiply same-based powers, you add the exponents.

$$(x^2)(x^3) = (x*x)(x*x*x) = x^5 \qquad x^2x^3 = x^{2+3} = x^5$$

Exponent of a Power Property: a power (base and an exponent) that has another exponent $(x^2)^3$ is simplify by multiplying the exponents

$$(x^2)^3 = (x*x)(x*x)(x*x) \quad = x^{2*3} = x^6$$

Exponent of a Product Property: (an exponent of two or more different-based powers that are being multiplied together) is simplified by multiplying the exponent outside of the parentheses by each of the exponents inside of the parentheses. $(xy^3)^2 = (xy^3)(xy^3) = xxy^3y^3 = x^2y^6$

$$(x^2y^3)^4 = x^{2*4}y^{3*4} = x^8y^{12}$$

This makes it seem that there is a "distributive property of exponents" → ***there is NOT.***

$$(x+y)^2 \neq x^2 + y^2$$

$$(x+y)^2 = x^2 + 2xy + y^2$$