Name _____

Powers of a Product (Raising a Product to a Power)

Date _____ Period _____

Powers of a Product

$$(x \cdot y)^m = x^m \cdot y^m$$

For a product raised to a power, distribute the power to all exponents

$$(3y^3)^2$$

Zero Exponent Property

$$a^0 = 1$$

Negative Exponent Property

$$a^{-m} = \frac{1}{a^m} \qquad \frac{1}{a^{-m}} = a^m$$

Product of Powers

$$x^m \cdot x^n = x^{m+n}$$

When multiplying like bases, add the exponents

Quotient of Powers

$$\frac{x^m}{x^n} = x^{m-n}$$

When dividing like bases, subtract the exponents

Power to a Power

$$(x^m)^n = x^{m \cdot n}$$

When raising a power to a power, multiply exponents

$$(x \cdot y)^m = x^m \cdot y^m$$

For a product raised to a power, distribute the power to all exponents

$$(4a^2)^3$$

$$(2x^2)^2(-3x^4)^4$$

$$(x \cdot y)^m = x^m \cdot y^m$$

For a product raised to a power, distribute the power to all exponents

$$(3a^2)^3(a^4b)^4$$

$$(x^2y^3)^{-2}(3x^{-3})^4$$

$$(x \cdot y)^m = x^m \cdot y^m$$

For a product raised to a power, distribute the power to all exponents

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

$$\frac{(4a^{-3})^2}{(ab^4)^2}$$

Powers of a Product

$$(x \cdot y)^m = x^m \cdot y^m$$

For a product raised to a power, distribute the power to all exponents