



Date:

Section:

Objective:

The following properties are true for all real numbers a and b and all integers m and n , provided that no denominators are 0 and that 0^0 is not considered.

1 as an exponent: e.g.)

0 as an exponent: e.g.)

The Product Rule: e.g.)

The Quotient Rule: e.g.)

The Power Rule: e.g.)

Raising a product to a power: e.g.)

Raising a quotient to a power: e.g.)

Negative exponents: e.g.)

e.g.)

e.g.)

To *simplify* an expression containing powers means to rewrite the expression without parentheses or negative exponents.

Examples: Simplify the following expressions.

a) $m^5 \cdot m^7$

b) $(5a^2b^3)(3a^4b^5)$

c) $\frac{r^9}{r^3}$

d) $\frac{p^3}{p^7}$

e) $\frac{10x^{11}y^5}{2x^4y^7}$

f) $\frac{4x^3y^2}{6x^7y}$

g) $(-2)^4$

h) -2^4

i) $5x^{-4}y^3 \cdot x^2y^{-1}$

j) $\frac{1}{6^{-2}}$

k) $9^{-3} \cdot 9^8$

l) $\frac{3x^2}{15x^{-3}y^{-4}}$

m) $(3^5)^4$

n) $\frac{y^{-5}}{y^{-4}}$

o) $(y^{-5})^7$

p) $(a^{-3})^{-7}$

q) $(-2x)^3$

r) $\left(\frac{x^2}{2}\right)^4$

s) $(3x^5y^{-1})^{-2}$

t) $\left(\frac{y^2z^3}{5}\right)^{-3}$