

Exponent LawsIntegral Exponents

$$a^n$$

An expression of the form a^n is called a _____.

Positive Integral Exponent

$$a^n =$$

Negative Integral Exponent

$$a^{-n} =$$

Zero Exponent

$$a^0 =$$

Law for...	General Form	Example
Multiplication of powers	$x^m \cdot x^n =$	$5^4 \cdot 5^7 =$
Division of Powers	$\frac{x^m}{x^n} =$	$\frac{4^6}{4^2} =$
Power of a Power	$(x^m)^n =$	$(6^5)^2 =$
Power of a Product	$(xy)^n =$	$(3y)^3 =$
Power of a Quotient	$\left(\frac{x}{y}\right)^n =$	$\left(\frac{3}{2}\right)^4 =$

Example 1. Simplify. Express your answer with positive exponents

a) $x^{-3} \cdot x^{-5}$

b) $m^2 \div m^{-3}$

c) $\frac{a^5 b^3}{a^2 b^2}$

d) $(-2c^3 d^{-5} e)^2$

e) $(4x^3 y^2)(7x^2 y^4)$

f) $\left(\frac{3x^2}{z^3}\right)^2$

g) $\frac{(2x^{-2}y)^3}{10x^{-4}y^{-3}}$

h) $\frac{(-2x^{-3}y)(-12x^{-4}y^{-2})}{6xy^{-3}}$

Example 2. Evaluate. Answers should be left as reduced fractions (decimal answers are not acceptable).

Do not use a calculator!!!

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

b) $\frac{(-6)^0}{2^{-3}}$

c) $\frac{2^{-4} + 2^{-6}}{2^{-3}}$

d) $\frac{3^{-5}}{3^{-4} + 3^{-3}}$