

Laws of Exponents

1) Multiply powers with the same base, you add exponents

$$x^3 \cdot x^4 = x^7$$

2) Divide powers with the same base, you subtract exponents

like bases

$$\frac{x^7}{x^2 y^3} = \frac{x^5}{y^3}$$

3) Power of a power
 ↳ exponent attached to bracket must apply to all its insided bracket → multiply exponents

Ex) $(2n^3)^4$

$$(2^4 n^{12})$$

$$16n^{12}$$

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

$$= \frac{x^{12}}{y^8}$$

4) Zero Exponent law
 ↳ anything raised to the exponent "0" is 1
 $x^0 = 1$ or $[\frac{x^3 y^2}{15z^3 y^7}]^0 = 1$

5) Negative Exponents

→ tied to bracket → flip all terms inside → flip Num Denom
 $(\frac{x^7}{y^3})^{-2} = (\frac{y^3}{x^7})^2$ then apply laws

$$= \frac{y^6}{x^{14}}$$

Ex) $(4x^{-5}y^{-3})^4$
 apply power of power law

As more to bottom → $= 4^{-4} x^{20} y^{12}$

$$= \frac{x^{20} y^{12}}{4^4}$$

$$= \frac{x^{20} y^{12}}{256}$$

2) $\frac{2n^4}{(4m^4 n^0)(m^1 n^1)}$

$$= \frac{2n^4}{24m^5 n^1}$$

$$= \frac{1n^3}{2m^5}$$

2) $[\frac{a^5 b^{-3}}{a^{-3} b^3}]^2 = (a^{5+3} b^{-3-3})^2 = (a^8 b^{-6})^2 = \frac{(a^8)^2}{(b^6)^2} = \frac{a^{16}}{b^{12}}$

$[\frac{a^5 a^2 b^3}{b^3 (a^7)^2}]^2 = \frac{a^7 b^3}{a^{14} b^3} = \frac{a^7}{a^{14}} = \frac{1}{a^7}$

Prime #

2, 3, 5, 7, 11, 13, 17, 19, 23, ...