

Laws of Exponents

EXP 5

Product of Powers Property: (multiplying)

$$a^b * a^c = a^{b+c}$$

when multiplying and the bases are same, add the exponents

$$\begin{array}{c} 3 \qquad 5 \\ \underbrace{2} * \underbrace{2} = 2^{3+5} = 2^8 = 256 \\ 2 \cdot 2 \cdot 2 * 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \\ \\ 2^8 \end{array}$$

Power of a Product Property:

$$(ab)^m = a^m \cdot b^m$$

when multiplying and the exponents are same, multiply the bases

$$2^3 * 4^3 = 8^3 = 512$$

$$2 \cdot 2 \cdot 2 * 4 \cdot 4 \cdot 4$$
$$8 \cdot 8 \cdot 8$$

$$\begin{array}{r} 64 \\ * 8 \\ \hline \end{array}$$

Simplified

- all exponents are positive
- all power to power \rightarrow simplified to one exponent
- the same base does not appear more than once
- the coefficients are in lowest terms