Laws of Exponents

An exponent is a mathematical notation that represents how many times a base is multiplied by itself. Other terms used to define exponents are 'power' or 'index'. An exponential term is a term that can be expressed as a base raised to an exponent. For example, in an exponential expression a^n, $'a'$ is the base and $'n'$ is the exponent. The exponent can be a number or a constant; they can also be a variable. They are generally positive real numbers, but they can also be negative numbers.

Laws of exponents: If a and b are any real numbers then

$a^m \times a^n = a^{m+n}$

$\dfrac{a^m}{a^n} = a^{m-n}$

$(a^m)^n = a^{mn}$

$(a^m \times b^m) = (a \times b)^m$

$\dfrac{a^m}{b^m} = \left(\dfrac{a}{b}\right)^m$

$a^0 = 1$

$a^{-n} = \dfrac{1}{a^n}$

Where m and n are rational numbers.

① $a^m \times a^n = a^{m+n}$

② $\dfrac{a^m}{a^n} = a^{m-n}$

③ $(a^m)^n = a^{mn}$

④ $(a^m \times b^m) = (a \times b)^m$

⑤ $\dfrac{a^m}{b^m} = \left(\dfrac{a}{b}\right)^m$