

Definition and Properties of Exponents

$$a^1 = a \text{ for any number } a, a \neq 0$$

$$a^0 = 1 \text{ for any number } a, a \neq 0$$

Negative Exponents : $a^{-n} = \frac{1}{a^n}, \frac{1}{a^n} = a^{-n}, a \neq 0$

Product Rule : $a^m \bullet a^n = a^{m+n}$

Quotient Rule : $\frac{a^m}{a^n} = a^{m-n}$

Power Rule : $(a^m)^n = a^{mn}$

Raising a Product to a Power : $(ab)^n = a^n b^n$

Raising a Quotient to a Power : $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$