

The Exponent Properties

The Product Properties of Exponents

For all real numbers x and y and real number constants m and n

1. $x^m x^n = x^{m+n}$ The Product Property
2. $(x^m)^n = x^{m \times n}$ The Power Property
3. $(xy)^m = x^m y^m$ The Power of a Product Property

The Quotient Properties of Exponents

For all real numbers x and y and real number constants m and n

4. $\frac{x^m}{x^n} = x^{m-n}$ or $\frac{1}{x^{n-m}}$ ($x \neq 0$) The Quotient Property
5. $\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$ ($y \neq 0$) The Power of a Quotient Property

Integer Exponents Less Than 1

For all real numbers x and y and real number constants m

6. $x^0 = 1$ ($x \neq 0$) Zero-exponent
7. $x^{-m} = \frac{1}{x^m}$ and $\frac{1}{x^{-m}} = x^m$ ($x \neq 0$) Negative Exponent