

Properties of Exponents

1. **Multiplication** $a^m \cdot a^n = a^{m+n}$

2. **Division** $\frac{a^m}{a^n} = a^{m-n}$

3. **Negative Exponent:** $\frac{1}{a^m} = a^{-m}$

4. **Zero Power:** $a^0 = 1$

5. **Power to a Power:** $(a^m)^n = a^{mn}$

6. **Power of a Product:** $(ab)^n = a^n b^n$

7. **Power of a Quotient:** $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$

8. **Fractional Exponents:** $a^{1/n} = \sqrt[n]{a}$ and $a^{m/n} = \sqrt[n]{a^m} = \sqrt[n]{a}^m$