

Exponents Laws

Law of Multiplication: $x^m \times x^n = x^{m+n}$

Law of Division: $\frac{x^m}{x^n} = x^{m-n} \quad (x \neq 0)$

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

Zero Exponents: $x^0 = 1 \quad (x \neq 0)$

Negative Exponent:

$$x^{-n} = \frac{1}{x^n} \quad (x \neq 0) \qquad x^n = \frac{1}{x^{-n}} \quad (x \neq 0)$$

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$$x^{\frac{1}{n}} = \sqrt[n]{x}$$

$$x^{\frac{m}{n}} = \left(\sqrt[n]{x}\right)^m = \sqrt[n]{x^m}$$

$$x^{-\frac{1}{n}} = \frac{1}{\sqrt[n]{x}} = \frac{1}{x^{\frac{1}{n}}} \qquad x^{-\frac{m}{n}} = \frac{1}{\left(\sqrt[n]{x}\right)^m} = \frac{1}{x^{\frac{m}{n}}}$$