

Math Formulas

A Comprehensive Reference

November 30, 2025

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Math Formulas

Set

Inline set notation: $B = \{1, 2, 3\}$.

More display math:

$\bigcup_{i=1}^n A_i$, $\bigcap_{i=1}^n A_i$

Algebra

Polynomial factorization example:

$$x^2 + 5x + 6 = (x+2)(x+3)$$

Permutation and Combination

Stirling numbers / binomial identities or simple examples.

$$\text{binom}\{n\}{k} = \text{binom}\{n-1\}{k} + \text{binom}\{n-1\}{k-1}$$

Calculus

Fundamental theorem of calculus (display):

$$\frac{d}{dx} \int_a^x f(t) dt = f(x)$$

Vector

Vector norm and unit vector:

$$|\mathbf{v}| = \sqrt{v_x^2 + v_y^2 + v_z^2}, \quad \hat{\mathbf{v}} = \frac{\mathbf{v}}{|\mathbf{v}|}$$

Transforms

Laplace transform table entry example and inverse transform idea.

Elementary Probability & Statistics

Binomial distribution (pmf):

$$P(X=k) = \text{binom}\{n\}\{k\} p^k (1-p)^{n-k}$$