10 Mathematical Formulas in LaTeX

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Here are ten different mathematical formulas written in LaTeX:

1 Formulas

1.1 1. Quadratic Formula

The solution to the quadratic equation $ax^2 + bx + c = 0$ is given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

1.2 2. Pythagorean Theorem

In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides:

$$a^2 + b^2 = c^2$$

1.3 3. Euler's Formula

Euler's famous equation, which relates the exponential function to trigonometric functions:

$$e^{i\pi} + 1 = 0$$

1.4 4. Binomial Theorem

The binomial expansion for $(x + y)^n$ is:

$$(x + y)^n = \sum_{k=0}^{n} \binom{n}{k} x^{n-k} y^k$$

1.5 5. Area of a Circle

The area A of a circle with radius r is:

$$A = \pi r^2$$

1.6 6. Derivative of a Function

The derivative of a function $f(x)$ is defined as:

$$f'(x) = \lim_{\Delta x \to 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$$

1.7 7. Integral of a Function

The indefinite integral of a function $f(x)$ is:

$$\int f(x)\,dx = F(x) + C$$

where $F(x)$ is the antiderivative of $f(x)$ and C is the constant of integration.

1.8 8. Taylor Series

The Taylor series expansion of a function $f(x)$ around $x = a$ is:

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!}(x - a)^n$$

1.9 9. Probability of an Event

The probability P of an event A is given by:

$$P(A) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}$$

1.10 10. Fundamental Theorem of Calculus

The fundamental theorem of calculus links differentiation and integration:

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