

LaTeX Math Examples

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1 Inline Math

The formula for the area of a circle is $A = \pi r^2$. Einstein's famous equation: $E = mc^2$.

2 Display Math

Here is an example of a standalone equation:

$$E = mc^2$$

3 Equation Environment (With Numbering)

We can also number equations using the `equation` environment:

$$F = ma \tag{1}$$

4 Aligning Equations

The `align` environment allows for aligned multi-line equations:

$$a^2 + b^2 = c^2 \tag{2}$$

$$e^{i\pi} + 1 = 0 \tag{3}$$

5 Common Mathematical Symbols

Here are some common symbols in LaTeX:

- Greek letters: $\alpha, \beta, \gamma, \pi, \theta, \Omega$
- Superscripts and subscripts: x_i^2

- Fraction: $\frac{a}{b}$
- Summation: $\sum_{i=1}^n i$
- Integral: $\int_0^1 x^2 dx$

6 Matrices

The following is a 2×2 matrix:

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

7 Cases

Below is a piecewise function:

$$f(x) = \begin{cases} x^2 & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

8 Spacing in Math Mode

Using different spacing commands:

$$a \, b \quad c \qquad d$$