🧮 LaTeX Math Cheat Sheet

Basic Symbols

```
\alpha, \beta, \gamma, \delta, \epsilon, \theta, \lambda, \mu, \pi, \sigma, \phi, \omega
\infty \quad \approx \quad \equiv \quad \neq \quad \propto \quad \because \quad \therefore
\leq \quad \geq \quad < \quad > \quad =
```

Arithmetic & Algebra

```
a + b \quad a - b \quad a \times b \quad a \cdot b \quad a \div b \quad \frac{a}{b} \quad \sqrt{a}
```

Exponents & Logs

```
x^n \quad e^x \quad \log x \quad \ln x
```

Summation & Product

```
\sum_{i=1}^{n} i \quad \prod_{i=1}^{n} i
```

Integrals & Derivatives

```
\int x^2 \, dx \quad \int_{a}^{b} x^2 \, dx

\frac{dy}{dx} \quad \frac{\partial f}{\partial x} \quad \nabla f

f'(x) \quad f''(x)
```

Limits

```
\lim_{x \to 0} \frac{\sin x}{x}
```

Matrices

```
\begin{bmatrix}
a & b \\
c & d
\end{bmatrix}

\begin{pmatrix}
a & b \\
c & d
\end{pmatrix}
```

Piecewise Functions

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

Vectors & Dots

```
\vec{v} \quad \hat{i} \quad \cdot \quad \times

a_1, a_2, \ldots, a_n \quad \dots \quad \vdots \quad \ddots
```

Brackets (Scaling)

```
( a + b ) \quad \left( \frac{a}{b} \right)

\left[ \sum_{i=1}^{n} x_i \right] \quad \left\{ x \in \mathbb{R} \mid x > 0 \right\}
```

Common Sets

```
\mathbb{N} \quad \mathbb{Z} \quad \mathbb{Q} \quad \mathbb{R} \quad \mathbb{C}
```

Logic & Set Theory

```
\forall \quad \exists \quad \in \quad \notin \quad \subseteq \quad \cup \quad \cap \quad \Rightarrow \quad \Leftrightarrow
```