\LaTeX{} basic math demo

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Inline math is enclosed in $\ldots$. Use braces for grouping; escape them to get actual braces, as in $N = \{1, 2, \ldots\}$.

To place a single-symbol superscript $N$ on some symbol, use $^N$. To place a multi-symbol superscript, use $^\{\ldots\}$. Subscripts work the same way but they use _N or _{\ldots}. Example: $x_0^{2\sin \phi}$.

Use centered dots for a series of operations like $a_0 x^n \times a_1 x^{n-1} \times \cdots \times a_n x^0$.

Display math is set inside $\[ \ldots \]$ commands. Constants are set in Roman type, variables in italics, and these delimiters are entered as themselves. All spaces are ignored.

\[ f(123, x') + - = / <>:!|[]() \]

Here’s an example of math inside $\[ \ldots \]$, $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

with the text paragraph continuing afterward.

For small fractions like $1/2$ just use a slash. To stack the numerator and denominator:

\[ \frac{y - y_1}{x - x_1} = \frac{y_2 - y_1}{x_2 - x_1} \]

Square and $n^{th}$ roots:

\[ \sqrt{4} \text{ and } \sqrt[3]{8} \]

Integrals and summations are just another symbol, and the decorations are added as sub- and superscripts. Escape the names of trig functions so they will be set in Roman type.

\[ \int_0^{\pi/2} \frac{dx}{1 + \tan^m x} = \frac{\pi}{4} \]
Also:
\[
\coth x = \frac{1}{x} + 2x \sum_{n=1}^{\infty} \frac{1}{(n\pi)^2 + x^2}
\]

Greek letter commands have the same name as the letter (capitalized or lowercased), except for the glyphs that are the same as an English letter (\(A\alpha B\beta \gamma \Delta \delta \varepsilon \varepsilon \zeta \eta \Theta \theta \iota \kappa \Lambda \lambda \mu \nu \Xi \Xi \Oo \Pi \rho \Sigma \sigma \Tau \tau \upsilon \Phi \phi \chi \Psi \psi \Omega \omega\)), plus some variants: \(\theta \varpi \phi \varphi\).

More common symbols: \(\pm \leq \geq \neq \times \div \cap \cup \setminus \sqsubset \sqsupset \subseteq \subseteq \in \ni \sim \approx \equiv \propto \parallel \neq \not \in \not\).

The \texttt{\textbackslash not} command slashes the following operator as in \(\neq\) and \(\neq\), but \(\notin\) is a separate command.

Here are some commands you can use to change font styles inside math mode.

<table>
<thead>
<tr>
<th>Command</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{\mathrm{...}}</td>
<td>ab</td>
</tr>
<tr>
<td>\texttt{\mathtt{...}}</td>
<td>cd</td>
</tr>
<tr>
<td>\texttt{\mathit{...}}</td>
<td>\Xi\Phi</td>
</tr>
<tr>
<td>\texttt{\mathbf{...}}</td>
<td>EF</td>
</tr>
<tr>
<td>\texttt{\mathcal{...}}</td>
<td>\mathcal{IJK}</td>
</tr>
</tbody>
</table>