

LaTeX Example

Welcome to L^AT_EX (pronounced “Lay-Tech”), the most popular mathematical typesetting language in the world. This PDF document `latexsample2.pdf` was created by running L^AT_EX on a program contained in the file `latexsample2.tex`, which was written with the purpose of creating this document. This document contains a few random examples that might help you when typing. The most important character is `\`, typically located on the upper right of your keyboard. Every L^AT_EX command starts with this character. I made this backslash by typing `\verb#\#` to use the “verbatim mode”. I could have also used `\textbackslash` to make `\`. Notice the nice shape of my quotation marks in the sentences above as opposed to this ”quote” where I wrongly used the double quotation character.

Notice also that many commands take inputs, which go between the curly brace grouping symbols `{` and `}`. There are many resources for learning about L^AT_EX, including Google.

1 Lists

1. This is a list.
2. Here is the second item.

There are other ways of making lists.

- Sometimes you’d like a list ...
- ... without numbers.

2 Math

The first rule (see the next document) is that all mathematics must be put in a mathematical environment.

Inline mathematical symbols like e or π are always enclosed within dollar signs `$`.

I like this integral: $\int_0^1 \frac{dx}{\sqrt{x}}$.

If you wanted to center that text, you could put it in the `center` environment:

$$\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}.$$

You can let the math be larger with `\displaystyle`:

Area $\left(\bigcup_{n=1}^{\infty} \frac{1}{n} \times \frac{1}{n} \text{ square} \right) = \frac{\pi^2}{6}$, or you could do both by using, instead of the inline `$... $` environment, the display math environment with `\[` and `\]`:

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}.$$

Or we could use the `equation` environment to make a numbered equation:

$$\int_0^1 \frac{dx}{\sqrt{x}}. \tag{1}$$

Wait – is that an equation?

The `array` environment is great for people who love matrices, such as

$$M = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

3 Spacing

One can skip space vertically or horizontally with `\bigskip`, `\medskip`, `\smallskip` or `\vspace{1.3in}` and `\hspace{0.2cm}`. Remove paragraph indentations with `\noindent`. Another useful horizontal spacer is `\quad`.

Look, I made a 0.3 inch space! In math mode, we can use spacers like `\,` to make $\int f(x)dx$ look better: $\int f(x) dx$

4 More Symbols

Some useful logical symbols include \forall , \exists , \in , \ni , \subseteq , and \supseteq .

Convergent sequences look like this:

$$\lim_{n \rightarrow \infty} a_n = L.$$

There are several funky symbols you might want - they are included in the AMS Symbol package. (You need to put `\usepackage{amssymb}` in the preamble.)

\mathbb{R} \mathbb{Q} \square \blacksquare ε \emptyset \mathcal{P} \mathcal{N}