LaTeX Example

Welcome to LaTeX(pronounced "Lay-Tech"), the most popular mathematical typesetting language in the world. This PDF document `latexsample2.pdf` was created by running LaTeX 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 LaTeX 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 LaTeX, 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 \qquad.

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:

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

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 $\emptyset$ $\mathcal{P}$ $\mathcal{N}$