Intro to LaTeX

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Abstract

This is a simple paragraph at the beginning of the document. A brief introduction about the main subject. The document contains the very basics of LaTeX documentations. The tutorial is gratefully followed from Overleaf docs.

Chapter 1

LaTeX 101

1.1 Preamble, Paragraphs and Emphasis

First document. This is a simple example, with no extra parameters or packages included. We have now added a title, author and date to our first LaTeX document!

This line will start a second Paragraph.

Some of the **greatest** discoveries in <u>science</u> were made by ***accident***.

Some of the greatest *discoveries* in science were made by accident.

Some of the greatest discoveries *in science were made by accident.*

1.2 Images and Figures

1.2.1 Image

The universe is immense and it seems to be homogeneous, in a large scale, everywhere we look at.

There's a picture of a galaxy above.
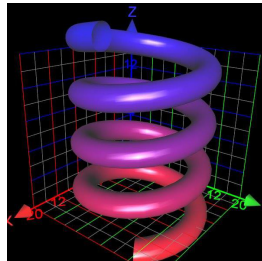
1.2.2 Figure

Figure 1.1: 3D Circular Pipe

As you can see in the figure 1.1, the function equivalent around 0. Also, in the page 2 is the same example.

1.3 Lists

Some unordered lists

- The individual entries are indicated with a black dot, a so-called bullet.

- The text in the entires may be of any length.

Some ordered lists

1. This is the first entry of the list

2. The list number increases

3. As each entry is added

1.4 Math in LaTeX

In physics, the mass-energy equivalence is stated by the equation $E = mc^2$ discovered in 1905 by Albert Einstein. In natural units $(c = 1)$ the formula expresses the identity

$$E = m$$

In mathematics the most beautiful equation is stated as

$$e^{i\pi} + 1 = 0 \tag{1.1}$$

Subscripts in mathematics are written as a_b and superscripts are written as a^b. These can be combined and nested to write equations such as:

$$T_{j_1 j_2 \ldots j_q}^{i_1 i_2 \ldots i_p} = T(x^{i_1}, \ldots, x^{i_p}, e_{j_1}, \ldots, e_{j_q})$$

We write integral using using $\int$ and fractions using $\frac{a}{b}$. Limits are placed on integral using subscripts and superscripts.

$$\int_0^1 \frac{dx}{e^x} = \frac{e-1}{e}$$

Lower case Greek letters are written as ω δ etc. while upper case Greek letters are written as Ω Δ.

Mathematical operators are prefixed with a backslash as $\sin(\beta)$, $\cos(\alpha)$, $\log(x)$ etc.

Unnumbered Section

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Etiam lobortis facilisissem

1.5 Creating Tables

1.5.1 Basic Tables

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

1.5.2 Adding borders

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

- | c | c | c | : This declares that three columns, separated by a vertical line, are going to be used in the table. The | symbol specifies that these columns should be separated by a vertical line.

- \hline: This will insert a horizontal line. We have included horizontal lines at the top and bottom of the table here. There is no restriction on the number of times you can use \hline.

Creating tables in LaTeX can be a bit tricky sometimes, so you may want to use the TablesGenerator.com online tool to export LaTeX code for tables. The File > Paste table data option lets you copy and paste data from spreadsheet applications.

Col1	Col2	Col2	Col3
1	6	87837	787
2	7	78	5415
3	545	778	7507
4	545	18744	7560
5	88	788	6344

1.6   Captions, labels and references

You can caption and reference tables in much the same way as images. The only difference is that instead of the figure environment, you use the table environment.

able 1.1 is an example of referenced LaTeX elements.

Col1	Col2	Col2	Col3
1	6	87837	787
2	7	78	5415
3	545	778	7507
4	545	18744	7560
5	88	788	6344

Table 1.1: Table to test captions and labels