

A Brief Note on L^AT_EX

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1 documentclass

```
\documentclass[12pt]{article}
```

2 Packages

```
\usepackage[utf8]{inputenc}
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{lipsum}
\usepackage{xcolor}
\usepackage{hyperref}
```

3 Meta information

3.1 Title

```
\title{A Brief Note on \LaTeX}
```

3.2 Author

```
\author{Mehmet Hakan Satman}
```

3.3 Date

`\date{\today}`

3.4 Making Title

`\maketitle`

4 Table of Contents

`\tableofcontents`

5 Paragraphs

This is the first paragraph. It contains some text to demonstrate how paragraphs are created in `LaTeX`.

This is the second paragraph. Notice the space between this paragraph and the previous one, which indicates a new paragraph has started.

This is the third paragraph. It follows immediately after the second paragraph without any additional vertical space.

This is the first paragraph. It contains some text to demonstrate how paragraphs are created in `LaTeX`.

This is the second paragraph. Notice the space between this paragraph and the previous one, which indicates a new paragraph has started.

`\noindent` This is the third paragraph. It follows immediately after the second paragraph without any additional vertical space.

6 Centering

This text is centered in the document.

`\begin{center}`

This text is centered in the document.

`\end{center}`

7 Quotes

Inline Quote: “This is an inline quote in L^AT_EX.”

‘‘This is an inline quote in \LaTeX.’’

8 Bold, italic, and underline Text

Bold Text: **This text is bold.**

`\textbf{This text is bold.}`

Italic Text: *This text is italic.*

`\textit{This text is italic.}`

Underline Text: This text is underlined.

`\underline{This text is underlined.}`

Bold and Italic Text: ***This text is bold and italic.***

`\textbf{\textit{This text is bold and italic.}}`

Bold and Underline Text: **This text is bold and underlined.**

`\textbf{\underline{This text is bold and underlined.}}`

Bold, italic, and Underline Text: ***This text is bold, italic, and underlined.***

`\textbf{\textit{\underline{This text is bold, italic, and underlined.}}}`

9 Colored Text

Required package: `\usepackage{xcolor}`

Red : **This text is red.**

`\textcolor{red}{This text is red.}`

Blue: **This text is blue.**

`\textcolor{blue}{This text is blue.}`

Green: **This text is green.**

`\textcolor{green}{This text is green.}`

Orange: **This text is orange.**

`\textcolor{orange}{This text is orange.}`

10 URLs

Required package: `\usepackage{hyperref}`
`https://www.example.com`

`\url{https://www.example.com}`

11 Sectioning Commands

Section:

`\section{Section Title}`

Subsection:

`\subsection{Subsection Title}`

Subsubsection:

`\subsubsection{Subsubsection Title}`

12 Mathematical Expressions

$$E = mc^2$$

`$$`
`E = mc^2`
`$$`

$$\int_a^b f(x) dx = F(b) - F(a)$$

`$$`
`\int_a^b f(x) \, dx = F(b) - F(a)`
`$$`

$$\Delta = b^2 - 4ac$$

\$\$
\Delta = b^2 - 4ac
\$\$

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

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

$$p(x) = a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$$

\$\$
p(x) = a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0
\$\$

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n$$

\$\$
f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n
\$\$

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

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

$$\text{sign}(x) = \begin{cases} 1 & x > 0 \\ 0 & x = 0 \\ -1 & x < 0 \end{cases}$$

```


$$\text{sign}(x) = \begin{cases} 1 & x > 0 \\ 0 & x = 0 \\ -1 & x < 0 \end{cases}$$


```

$$abs(x) = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$$

```


$$abs(x) = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$$


```

$$A = \begin{bmatrix} 1 & 2 & 4 \\ 0 & 1 & 3 \\ 0 & 0 & 1 \end{bmatrix}$$

```


$$A = \begin{bmatrix} 1 & 2 & 4 \\ 0 & 1 & 3 \\ 0 & 0 & 1 \end{bmatrix}$$


```

$$\begin{aligned} \max z &= x + 2y \\ \text{Subject to:} \\ 2x + 3y &\leq 52 \\ x + y &\geq 2 \\ x \geq 0, y &\geq 0 \end{aligned} \tag{1}$$

```

\begin{equation}
\begin{split}
&\max z = & x + 2y \\
&\text{Subject to:} & \\
&2x + 3y \leq 52 \\
&x + y \geq 2 \\
&x \geq 0, y \geq 0
\end{split}
\end{equation}

```

13 Lorem Ipsum

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

```
\lipsum[1-2]
```

Symbol	Description
α	<code>\alpha</code>
β	<code>\beta</code>
γ	<code>\gamma</code>
δ	<code>\delta</code>
Δ	<code>\Delta</code>
ϵ	<code>\epsilon</code>
ε	<code>\varepsilon</code>
γ	<code>\gamma</code>
Γ	<code>\Gamma</code>
ρ	<code>\rho</code>
η	<code>\eta</code>
ζ	<code>\zeta</code>
θ	<code>\theta</code>
λ	<code>\lambda</code>
μ	<code>\mu</code>
σ	<code>\sigma</code>
π	<code>\pi</code>
Σ	<code>\Sigma</code>
\int	<code>\int</code>
\sum	<code>\sum</code>
$\frac{a}{b}$	<code>\frac{a}{b}</code>
\sqrt{x}	<code>\sqrt{x}</code>
$\sqrt[n]{x}$	<code>\sqrt[n]{x}</code>
∞	<code>\infty</code>
x_i	<code>x_i</code>
x^n	<code>x^n</code>
x_i^n	<code>x_{i}^n</code>

Table 1: Common Mathematical Symbols in L^AT_EX

14 Tables

14.1 Tabular Environment

A	B	C
1	2	3
4	5	6

```

\begin{tabular}{|c|c|c|}
\hline
A & B & C \\
\hline
1 & 2 & 3 \\
4 & 5 & 6 \\
\hline
\end{tabular}

```

14.2 Tables with Caption

X	Y	Z
7	8	9
10	11	12

Table 2: A Simple Table

```

\begin{table}[h!]
\centering
\begin{tabular}{|c|c|c|}
\hline
X & Y & Z \\
\hline
7 & 8 & 9 \\
10 & 11 & 12 \\
\hline
\end{tabular}
\caption{A Simple Table}
\end{table}

```

15 Listings

15.1 Itemize Environment

- First item
- Second item

- Third item

```
\begin{itemize}
  \item First item
  \item Second item
  \item Third item
\end{itemize}
```

15.2 Enumerate Environment

1. First item
2. Second item
3. Third item

```
\begin{enumerate}
  \item First item
  \item Second item
  \item Third item
\end{enumerate}
```

15.3 Text in boxes

This is a text box in L^AT_EX. You can use it to highlight important information or to create a visual separation from the surrounding text.

```
\begin{center}
\framebox{
  \begin{minipage}{0.8\textwidth}
    This is a text box in \LaTeX. You can use it to highlight
    important information or to create a visual
    separation from the surrounding text.
  \end{minipage}
}
\end{center}
```