

Overleaf



Maria Vincent

Graduate Student, Institute for Astronomy

What is Overleaf?

Wikipedia puts this well: Overleaf is a collaborative cloud-based LaTeX editor used for writing, editing and publishing scientific documents. It partners with a wide range of scientific publishers to provide official journal LaTeX templates, and direct submission links.



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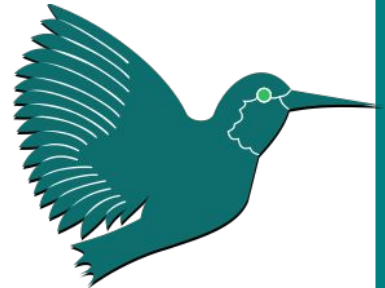
Like Google Docs in LaTeX

Beautiful templates for journal articles, project reports, resumes, etc.

Option to directly submit from overleaf- a lot of important journals have this option

So what is this LaTeX?

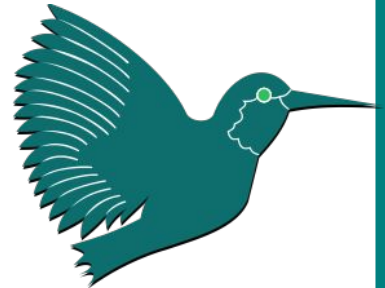
It is a software to write documents, where you use plain text following a certain syntax, like a markup language, to get formatted text, images and other features you usually type, click, drag and drop in a traditional word processor.



So what is this LaTeX?

Like HTML, where you
enclose content in tags

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So what is this LaTeX?

PROS

- Equations & in-line symbols look great in the typeset results.
- Easy to reuse code for equations or tables, and create templates
- Easier cross-referencing and bibliography

CONS

- Steeper learning curve
- Tables are not easy to design
- Sometimes it can be stubborn and frustrating to find the right packages to even get basic things right

Why Overleaf instead of a regular TeX editor?

Primarily because Overleaf also lets you write your documents in a rich text editor, if you don't know the LaTeX syntax, and everything works just the same. You'll still see the typeset document being created as you type/edit.



How to use Overleaf?

If you already have an account

The screenshot displays the Overleaf website interface. At the top, the Overleaf logo is on the left, and navigation links for 'Features & Benefits', 'Templates', 'Plans & Pricing', and 'Help' are in the center. On the right, there are 'Register' and 'Log In' buttons. The 'Log In' button is circled in red, with a line pointing to the text 'If you already have an account'. Below the navigation bar, the main heading 'LaTeX, Evolved' is prominently displayed, followed by the tagline 'The easy to use, online, collaborative LaTeX editor'. A preview of a LaTeX document is shown, with a file explorer on the left and a code editor in the center. At the bottom, a 'Get started now' section contains a registration form with fields for 'email@example.com' and a password, a 'Register' button (circled in red with a line pointing to the text 'If you don't have an account, you can register using your email address, or ORCID ID, and later connect to your GitHub'), and options to 'Register using Google' or 'Register using ORCID'. A checkbox for receiving emails is also present. At the very bottom, a small note states 'By registering, you agree to our terms of service.'

If you don't have an account, you can register using your email address, or ORCID ID, and later connect to your GitHub

New Project

All Projects

Your Projects

Shared with you

Archived Projects

Trashed Projects

TAGS/FOLDERS

+ New Folder

18L (2)

4al (7)

4bl (7)

ASTR 180 (5)

EPSS 136A (5)

Fall 2021 HW (2)

Maria Research (4)

SURF (3)

Uncategorized (33)

Search projects...

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Upgrade

| <input type="checkbox"/> Title | Owner | Last Modified ▾ | Actions |
|--|-------|---------------------|---|
| <input type="checkbox"/> Writing Markdown in LaTeX documents | You | 16 hours ago by You |     |
| <input type="checkbox"/> 699-1-Midterm-Vincent_Maria | You | 25 days ago by You |     |
| <input type="checkbox"/> 699-1 Proposal Vincent_Maria | You | a month ago by You |     |
| <input type="checkbox"/> Rose Vincent CV | You | 5 months ago by You |     |
| <input type="checkbox"/> Vincent Maria CV (Copy for Visa) | You | 6 months ago by You |     |
| <input type="checkbox"/> Vincent Maria CV Copy | You | 6 months ago by You |     |
| <input type="checkbox"/> ASTR 633 HW Fall 2021 HW × | You | 6 months ago by You |     |
| <input type="checkbox"/> ASTR 633 HW 7 | You | 6 months ago by You |     |
| <input type="checkbox"/> ISM Project: The Local Bubble | You | 7 months ago by You |     |
| <input type="checkbox"/> Lab4: Color Mag Diagram ASTR 180 × | You | 7 months ago by You |     |
| <input type="checkbox"/> Honors Thesis Maria Research × | You | 7 months ago by You |     |
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New Project

Blank Project

Example Project

Upload Project

Import from GitHub

Templates

Academic Journal

Book

Formal Letter

Homework Assignment

Poster

Presentation

Project / Lab Report

Résumé / CV

Thesis

View All

Maria Research (4)

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Example Project
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Import from GitHub

Templates

Academic Journal
Book
Formal Letter
Homework Assignment
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Presentation
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✖ Maria Research (4)

























































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Your best friend in overleaf- has a repository of templates created by users around the world, including publications for standard/suggested use

Features

Menu

Upgrade

Writing Markdown in LaTeX documents

Review

Share

Submit

History

Layout

Chat

Source

Rich Text

Ω

Recompile

example.md

LaTeX_project_logo_b...

latex.tex

main.tex

markdown.lua

markdown.sty

markdown.tex

refs.bib

File outline

Introduction

Pros and Cons of \LaTeX

Pros

Cons

```
1 \documentclass{article}
2
3 \usepackage[utf8]{inputenc}
4 \usepackage[T1]{fontenc}
5 \usepackage[a4paper,margin=1.5cm]{geometry}
6 \usepackage{fullpage}
7 \usepackage[numbers]{natbib}
8 \usepackage{minted}
9 \usepackage{graphicx}
10
11 \title{Sample Document using \LaTeX}
12 \author{Maria Vincent}
13 \date{July 5, 2022}
14
15 \begin{document}
16
17 \maketitle
18
19 \section{Introduction}
20 Hi there! This is a beginner's level document to demonstrate that \LaTeX is
21 beautiful, and a more organised way of creating a PDF document. It may seem
22 involved, but once you get the hang of it, you'll see the syntax is pretty
23 straightforward. You're literally telling the software where to place what.
24
25 \begin{figure}[h]
26 \centering
27 \includegraphics[width=0.4\textwidth]{LaTeX_project_logo_bird.png}
28 \caption{A Picture because it felt nice and appropriate at this point.}
29 \label{fig:my_label}
30 \end{figure}
31
32 \section{Pros and Cons of \LaTeX}
33
34 \LaTeX, as I said, is great! But you should know why or why not \LaTeX is the
35 right choice for you. So here are a few pros and cons (and also because I want
36 to use a bulleted list and other level headings).
37
38 \subsection{Pros}
```

Sample Document using \LaTeX

Maria Vincent

July 5, 2022

1 Introduction

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Figure 1: A Picture because it felt nice and appropriate at this point.

2 Pros and Cons of \LaTeX

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Some reasons why \LaTeX is nice:

1. Super helpful for Math! Equations and in-line math look great in the typeset results.
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Features

Gives the structure of doc based on section & subsection headings

The screenshot displays the Overleaf web editor interface. The top navigation bar includes 'Menu', 'Upgrade', 'Writing Markdown in LaTeX documents', 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. The left sidebar shows a file outline with 'main.tex' selected. The main editor shows the LaTeX source code, and the right pane shows the rendered PDF output.

File outline:

- example.md
- LaTeX_project_logo_b...
- latex.tex
- main.tex
- markdown.lua
- markdown.sty
- markdown.tex
- refs.bib

File outline details:

- Introduction
- Pros and Cons of \LaTeX
 - Pros
 - Cons

LaTeX Source Code:

```
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2
3 \usepackage[utf8]{inputenc}
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8 \usepackage{minted}
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Rendered PDF Output:

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Features

Create
/Upload new
file/folder or
delete,

List of files
for the doc-
main.tex
creates the
PDF output,
rest-
images, style
files, &
bibliography

Gives the
structure of
doc based on
section &
subsection
headings

The screenshot displays the Overleaf web editor interface. The top navigation bar includes 'Menu', 'Upgrade', 'Writing Markdown in LaTeX documents', 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. The main editor area is split into three panes: a file explorer on the left, a source code editor in the center, and a preview window on the right.

File Explorer (Left Pane): Shows a list of files including 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex' (highlighted), 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. Below this is a 'File outline' section showing the document structure: 'Introduction', 'Pros and Cons of \LaTeX', 'Pros', and 'Cons'.

Source Code Editor (Center Pane): Displays the LaTeX source code for 'main.tex'. The code includes document class, package loading, title, author, date, and content sections. The content section contains an introduction, a figure, and a section titled 'Pros and Cons of \LaTeX'.

Preview Window (Right Pane): Shows the rendered PDF output. The title is 'Sample Document using L^AT_EX'. The author is 'Maria Vincent' and the date is 'July 5, 2022'. The document includes an introduction, a figure of a hummingbird, and a section titled '2 Pros and Cons of L^AT_EX'.

Features

Switch between
typing in LaTeX
or Rich text
format

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Menu Upgrade Writing Markdown in LaTeX documents Review Share Submit History Layout Chat

Source Rich Text

Create /Upload new file/folder or delete,

List of files for the doc-main.tex creates the PDF output, rest-images, style files, & bibliography

Gives the structure of doc based on section & subsection headings

Switch between typing in LaTeX or Rich text format

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Maria Vincent
July 5, 2022

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To choose
special symbols
directly instead
of typing using
commands*

The screenshot displays the Overleaf web editor interface. At the top, there's a navigation bar with 'Menu', 'Upgrade', and 'Writing Markdown in LaTeX documents'. Below this, a toolbar shows 'Source', 'Rich Text', and a symbol icon. The left sidebar contains a file explorer with files like 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex', 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. A 'File outline' section shows 'Introduction', 'Pros and Cons of \LaTeX', 'Pros', and 'Cons'. The main editor area shows LaTeX source code for a document titled 'Sample Document using \LaTeX'. The right sidebar shows the rendered PDF output, which includes the title 'Sample Document using \LaTeX', author 'Maria Vincent', date 'July 5, 2022', and sections '1 Introduction' and '2 Pros and Cons of \LaTeX'. The PDF content includes a paragraph about LaTeX, a figure of a hummingbird, and a list of pros and cons.

* Premium

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Switch between
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format

To choose
special symbols
directly instead
of typing using
commands*

Track
Edits*

The screenshot displays the LaTeX Editor interface. The top bar includes a Menu icon, an Upgrade button, and the text 'Writing Markdown in LaTeX documents'. The main toolbar contains buttons for Review, Share, Submit, History, Layout, and Chat. Below the toolbar, there are tabs for Source, Rich Text, and a symbol picker (Ω). The Source tab is active, showing the LaTeX source code. The left sidebar shows a file list with files like example.md, LaTeX_project_logo_b..., latex.tex, main.tex (highlighted), markdown.lua, markdown.sty, markdown.tex, and refs.bib. Below the file list is a File outline section showing the document structure: Introduction, Pros and Cons of \LaTeX, Pros, and Cons. The right pane shows the rendered PDF output, which includes a title page, an introduction section, and a section on the pros and cons of LaTeX. The rendered output includes a logo of a bird and the text 'The LaTeX Project'.

* Premium

Features

Create /Upload new file/folder or delete,

List of files for the doc-main.tex creates the PDF output, rest—images, style files, & bibliography

Gives the structure of doc based on section & subsection headings

Switch between typing in LaTeX or Rich text format

To choose special symbols directly instead of typing using commands*

Track Edits* Share w/ 1 co-author^

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* Premium
^ Premium for more

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Track Edits*

Share w/ co-author

Journal submission (direct link in their template)

The screenshot displays the Overleaf web editor interface. At the top, a dark navigation bar includes a 'Menu' button, an 'Upgrade' button, and a title 'Writing Markdown in LaTeX documents'. Below this, a secondary bar contains tabs for 'Source' (active) and 'Rich Text', along with a symbol icon. The left sidebar features a file explorer showing a list of files: 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex' (highlighted), 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. Below the file list is a 'File outline' section showing a tree structure with 'Introduction' and 'Pros and Cons of \LaTeX'. The main editor area is split into two panes. The left pane shows the LaTeX source code, with line numbers 1 through 34. The right pane shows the compiled PDF output, which includes a title page, an introduction section, and a list of pros and cons of LaTeX. The PDF output is titled 'Sample Document using LaTeX' and includes a logo for 'The LaTeX Project'.

* Premium
^ Premium for more

Features

Create /Upload new file/folder or delete,

List of files for the doc-main.tex creates the PDF output, rest—images, style files, & bibliography

Gives the structure of doc based on section & subsection headings

Switch between typing in LaTeX or Rich text format

To choose special symbols directly instead of typing using commands*

Track Edits*

Share w/ co-author

Journal submission (direct link in their template)

Changes over last 24 hrs

The screenshot displays the Overleaf web editor interface. At the top, a dark navigation bar includes a 'Menu' icon, an 'Upgrade' button, and the text 'Writing Markdown in LaTeX documents'. Below this, a secondary bar contains tabs for 'Source' (selected) and 'Rich Text', along with a symbol icon. To the right of these tabs are buttons for 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. A 'Recompile' button is also visible. On the left side, a sidebar shows a file explorer with a list of files: 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex' (highlighted), 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. Below the file list is a 'File outline' section showing a tree structure with 'Introduction' and 'Pros and Cons of \LaTeX'. The main area is split into two panes. The left pane shows the LaTeX source code, with line numbers 1 through 34. The right pane shows the compiled PDF output, which includes a title page, an introduction section, and a section titled 'Pros and Cons of \LaTeX'. The PDF output features a logo of a bird and the text 'The \LaTeX Project'.

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Changes over last 24 hrs

Layout of this window (can also be manually adjusted)

The screenshot shows the Overleaf LaTeX editor interface. The top navigation bar includes 'Menu', 'Upgrade', 'Writing Markdown in LaTeX documents', 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. Below this is a toolbar with 'Source', 'Rich Text', and a symbol picker icon. The left sidebar contains a file explorer with files like 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex', 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. It also has a 'File outline' section showing 'Introduction', 'Pros and Cons of \LaTeX', 'Pros', and 'Cons'. The main editor area displays LaTeX source code for a document titled 'Sample Document using \LaTeX'. The right pane shows the rendered PDF output, which includes the title 'Sample Document using \LaTeX', author 'Maria Vincent', date 'July 5, 2022', and sections '1 Introduction' and '2 Pros and Cons of \LaTeX'. Annotations with arrows point to various features: 'Create /Upload new file/folder or delete,' points to the file explorer; 'List of files for the doc-main.tex creates the PDF output, rest—images, style files, & bibliography' points to the file list; 'Gives the structure of doc based on section & subsection headings' points to the file outline; 'Switch between typing in LaTeX or Rich text format' points to the Source/Rich Text tabs; 'To choose special symbols directly instead of typing using commands*' points to the symbol picker icon; 'Track Edits*' points to the Review button; 'Share w/ co-author' points to the Share button; 'Journal submission (direct link in their template)' points to the Submit button; 'Changes over last 24 hrs' points to the History button; and 'Layout of this window (can also be manually adjusted)' points to the Layout button.

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Layout of this window (can also be manually adjusted)

To chat with your coauthors (like in Google Docs)

The screenshot displays the LaTeX Editor interface. On the left, a sidebar contains a 'Menu' button, an 'Upgrade' button, and a file list including 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex' (highlighted), 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. Below the file list is a 'File outline' section showing 'Introduction', 'Pros and Cons of \LaTeX', 'Pros', and 'Cons'. The main editor area is split into two panes. The left pane shows the LaTeX source code with line numbers 1 through 34. The right pane shows the rendered PDF output, which includes a title page, an introduction section, and a section titled 'Pros and Cons of \LaTeX'. The top of the interface features a dark toolbar with buttons for 'Menu', 'Upgrade', 'Source', 'Rich Text', and a symbol button. The right side of the toolbar includes buttons for 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'. The rendered PDF output on the right shows a document titled 'Sample Document using \LaTeX' by Maria Vincent, dated July 5, 2022. It includes an introduction section and a section titled 'Pros and Cons of \LaTeX'.

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Features

Create /Upload new file/folder or delete,

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Download PDF

Switch between output file and LaTeX log to check for formatting and syntactical errors

The screenshot displays the LaTeX editor interface. At the top, a dark navigation bar contains icons for Menu, Upgrade, Review, Share, Submit, History, Layout, and Chat. Below this, a toolbar shows buttons for Source, Rich Text, and a symbol picker. The left sidebar features a file explorer with a list of files: example.md, LaTeX_project_logo_b..., latex.tex, main.tex (highlighted), markdown.lua, markdown.sty, markdown.tex, and refs.bib. Below the file list is a 'File outline' section showing the document structure: Introduction, Pros and Cons of \LaTeX, Pros, and Cons. The main editing area is split into two panes. The left pane shows the LaTeX source code, with line numbers 1 through 34. The right pane shows the rendered PDF output, which includes a title page with 'Sample Document using \LaTeX', author 'Maria Vincent', and date 'July 5, 2022'. The PDF content includes an introduction, a figure of a hummingbird, and sections on the pros and cons of \LaTeX. The bottom right corner of the PDF shows the page number '1'.

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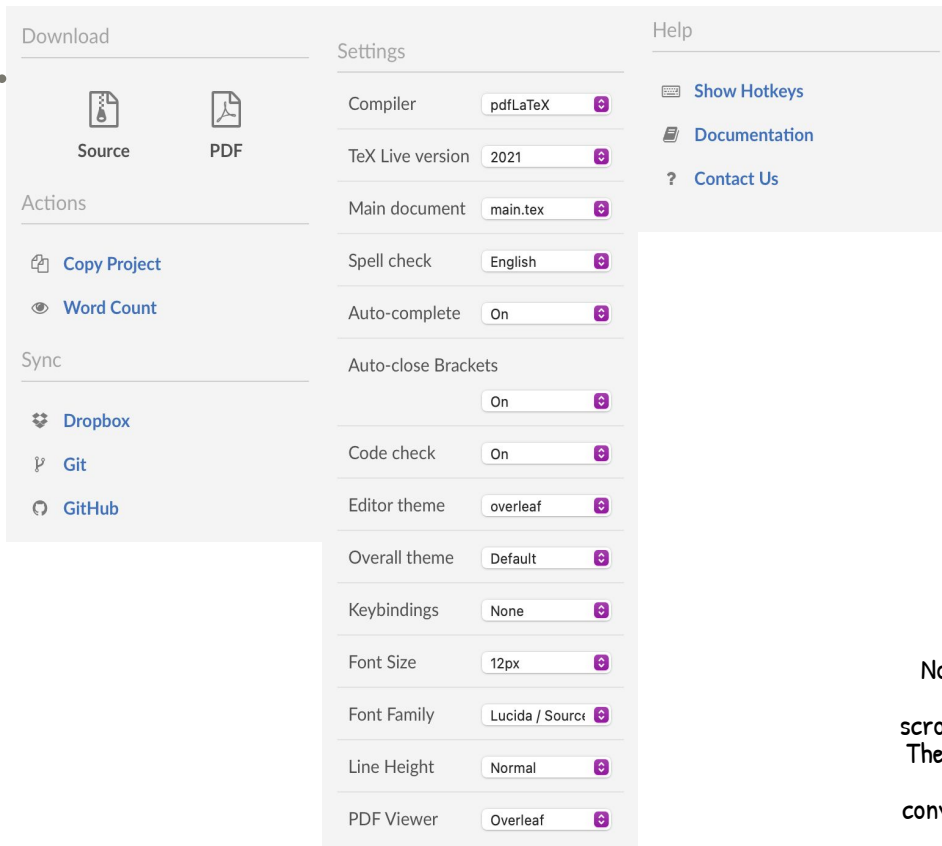
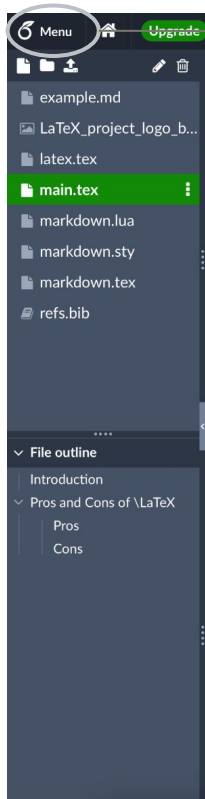
Switch between output file and LaTeX log to check for formatting and syntactical errors

Set to recompile automatically or manually with or without images

The screenshot shows the LaTeX editor interface with the following components and callouts:

- Menu Bar:** Includes 'Menu', 'Upgrade', 'Writing Markdown in LaTeX documents', 'Review', 'Share', 'Submit', 'History', 'Layout', and 'Chat'.
- File Explorer (Left):** Shows a list of files including 'example.md', 'LaTeX_project_logo_b...', 'latex.tex', 'main.tex' (highlighted), 'markdown.lua', 'markdown.sty', 'markdown.tex', and 'refs.bib'. A callout points to this area: 'Create /Upload new file/folder or delete,'.
- File Outline (Bottom Left):** Shows a tree view of the document structure: 'Introduction', 'Pros and Cons of \LaTeX', 'Pros', and 'Cons'. A callout points to this: 'Gives the structure of doc based on section & subsection headings'.
- Source/Rich Text Toggle:** Located at the top left of the editor, with a callout: 'Switch between typing in LaTeX or Rich text format'.
- Special Symbols:** A button with the Omega symbol (Ω) is highlighted with a callout: 'To choose special symbols directly instead of typing using commands*'. A note at the bottom right says '* Premium' and 'Premium for more'.
- Recompile Button:** A green button with a circular arrow icon, highlighted with a callout: 'Set to recompile automatically or manually with or without images'.
- Download PDF:** A button with a PDF icon, highlighted with a callout: 'Download PDF'.
- Output Files:** A button with a document icon, highlighted with a callout: 'Switch between output file and LaTeX log to check for formatting and syntactical errors'.
- Document Preview (Right):** Shows a rendered PDF of a 'Sample Document using LaTeX'. It includes a title page with 'Maria Vincent' and 'July 5, 2022', followed by sections '1 Introduction' and '2 Pros and Cons of LaTeX'. A callout points to the preview: 'To chat with your coauthors (like in Google Docs)'.

Features



Note: This is a single pane, scrollable menu, The 3 pane view is for the convenience for the slides

Basic LaTeX Example (using Overleaf)

```
\documentclass{article}

\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[a4paper,margin=1.5cm]{geometry}
\usepackage{fullpage}
\usepackage[numbers]{natbib}
\usepackage{minted}
\usepackage{graphicx}

\title{Sample Document using \LaTeX}
\author{Maria Vincent}
\date{July 5, 2022}

\begin{document}

\maketitle

\section{Introduction}

Hi there! This is a beginner's level document to demonstrate that \LaTeX is beautiful, and a more organised way of creating a PDF document. It may seem involved, but once you get the hang of it, you'll see the syntax is pretty straightforward. You're literally telling the software where to place what.

\begin{figure}[h]
  \centering
  \includegraphics[width=0.4\textwidth]{LaTeX_project_logo_bird.png}
  \caption{A Picture because it felt nice and appropriate at this point}
  \label{fig:my_label}
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\end{document}
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Sample Document using \LaTeX

Maria Vincent

July 5, 2022

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Preamble: To define the type of document you want to create and call on packages you need for the document

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July 5, 2022

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Document environment: Body and actual content of your document that includes everything that needs to be displayed and markup-type commands on how it has to be displayed

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\end{document}
```

• package

• keyword args. that override default settings

Preamble: To define the type of document you want to create and call on packages you need for the document

Sample Document using \LaTeX

Maria Vincent

July 5, 2022

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The \LaTeX Project

Document includes the main content and other pages like bibliography, index, glossary that can be designed separately

Document environment: Body and actual content of your document that includes everything that needs to be displayed and markup-type commands on how it has to be displayed

Figure & Figure Environment

```
\usepackage{graphicx}

\begin{figure}[h]
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\end{figure}
```



Figure 1: A Picture because it felt nice and appropriate at this point.

Figure & Figure Environment

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- Image Package (sort of like pylab or matplotlib in Python)

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This command actually inserts the image. `[]`-- size and cropping, `{}`-- the image

`\centering`

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`\caption{A Picture because it felt nice and appropriate at this point.}`

`\label{fig:latex_fig}`

`\end{figure}`

- This is like a tag which you call, for in-text referencing



Figure 1: A Picture because it felt nice and appropriate at this point.

- Figure caption

Math

INLINE

Just want to put a random equation here for demo. `$t_s = r_s`
`\sqrt{\frac{N-2}{1-r_s^2}}`

Just want to put a random equation here for demo. $t_s = r_s \sqrt{\frac{N-2}{1-r_s^2}}$

SEPARATE EQUATION LINE

```
\begin{equation}
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\end{equation}
```

$$t_s = r_s \sqrt{\frac{N-2}{1-r_s^2}} \quad (32)$$

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Eqn np. inserted by equation environ.

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(32)

Table

```
\begin{table}[h]
  \centering
  \begin{tabular}{|c|c|c|}
    \hline
    Quantity & Left & Right \\
    \hline
    Mean & 48.16 & 47.52 \\
    Median & 49.0 & 48.0 \\
    Mode & 52 & 49 \\
    Standard Error & 1.0683 & 1.0690 \\
    \hline
  \end{tabular}
  \caption{Basic statistics of the response
times}
  \label{tab:4_a}
\end{table}
```

| Quantity | Left | Right |
|----------------|--------|--------|
| Mean | 48.16 | 47.52 |
| Median | 49.0 | 48.0 |
| Mode | 52 | 49 |
| Standard Error | 1.0683 | 1.0690 |

Table 3: Basic statistics of the response times

Table

This creates the table, the other are support info for table

This sets number (and width if needed) of columns and text alignment

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Inserts new line. Works anywhere

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Table 3: Basic statistics of the response times

Inserts horizontal line. Again, works anywhere

Useful LaTeX Resources

- [Getting Started with LaTeX by NYU Libraries](#)
- [Compilation of Resources by Harvard Library](#)

Useful Overleaf Resources

- [Official Overleaf Tutorials](#)

Assignment

- Pick up a topic in astronomy of your choice
- Using the ApJ template on Overleaf, write a 2 page paper on the topic with intro, some discussion of current research and results, conclusions, future direction, and references.
- Include a few images, at least 2 equations, and 1 table.
- You can type in References manually or use a .bib file (the resources should explain that!)