

Documentation Home
Learn LaTeX in 30 minutes

ShareLaTeX guides

- Creating a document in ShareLaTeX
- Uploading a project
- Copying a project
- Creating a project from a template
- Including images in ShareLaTeX
- Exporting your work from ShareLaTeX
- Using bibliographies in ShareLaTeX
- Sharing your work with others
- Debugging Compilation timeout errors
- Knowledge Base

LaTeX Basics

- Creating your first LaTeX document
- Choosing a LaTeX Compiler
- Paragraphs and new lines
- Bold, italics and underlining
- Lists
- Errors

Mathematics

- Mathematical expressions
- Subscripts and superscripts
- Brackets and Parentheses
- Fractions and Binomials
- Aligning Equations
- Operators
- Spacing in math mode
- Integrals, sums and limits
- Display style in math mode
- List of Greek letters and math symbols
- Mathematical fonts

Figures and tables

- Inserting Images
- Tables
- Positioning Images and Tables
- Lists of Tables and Figures
- Drawing Diagrams Directly in LaTeX
- TikZ package

References and Citations

- Bibliography management in LaTeX
- Bibliography management with biblatex
- Biblatex bibliography styles
- Biblatex citation styles
- Bibliography management with natbib
- Natbib bibliography styles
- Natbib citation styles
- Bibliography management with bibtex
- Bibtex bibliography styles

Languages

- International language support
- Quotations and quotation marks
- Arabic
- Chinese
- French
- German
- Greek
- Italian
- Japanese
- Korean
- Portuguese
- Russian
- Spanish

Document structure

- Sections and chapters
- Table of contents
- Cross referencing sections and equations
- Indices
- Glossaries
- Nomenclatures
- Management in a large project
- Multi-file LaTeX projects
- Hyperlinks

Formatting

- Lengths in LaTeX
- Headers and footers
- Page numbering
- Paragraph formatting
- Line breaks and blank spaces
- Text alignment
- Page size and margins
- Single sided and double sided documents
- Multiple columns
- Counters
- Code listing
- Code Highlighting with minted
- Using colours in LaTeX
- Footnotes
- Margin notes

Fonts

- Font sizes, families, and styles
- Font typefaces
- Supporting modern fonts with XeLaTeX

Presentations

- Beamer
- Powerdot
- Posters

Commands

- Commands
- Environments

Field specific

- Theorems and proofs
- Chemistry formulae
- Feynman diagrams
- Molecular orbital diagrams
- Chess notation
- Knitting patterns
- CircuiTikz package
- Pgfplots package
- Typing exams in LaTeX
- Knitr
- Attribute Value Matrices

Class files

- Understanding packages and class files
- List of packages and class files
- Writing your own package
- Writing your own class
- Tips

 Search help library....

Integrals, sums and limits

Contents

- 1 Integrals
- 2 Multiple integrals
- 3 Sums and products
- 4 Limits
- 5 Integer and sum limits improvement
- 6 Further reading

Integrals

Integral expression can be added using the

`\int_{lower}^{upper}`

command.

Note, that integral expression may seems a little different in *inline* and *display* math mode - in *inline* mode the integral symbol and the limits are compressed.

LaTeX code	Output
Integral <code>\int_a^b x^2 dx</code> inside text	Integral $\int_a^b x^2 dx$ inside text
<code>\$\$\int_a^b x^2 dx\$\$</code>	$\int_a^b x^2 dx$

[Open an example in ShareLaTeX](#)

Multiple integrals

To obtain double/triple/multiple integrals and cyclic integrals you must use `amsmath` and `esint` (for cyclic integrals) packages.

LaTeX code	Output
<code>\iint_V \mu(u,v) \, du \, dv</code>	$\iint_V \mu(u,v) \, du \, dv$
<code>\$\$\iiint_V \mu(u,v,w) \, du \, dv \, dw\$\$</code>	$\iiint_V \mu(u,v,w) \, du \, dv \, dw$
<code>\$\$\iiint_V \mu(t,u,v,w) \, dt \, du \, dv \, dw</code>	$\iiint_V \mu(t,u,v,w) \, dt \, du \, dv \, dw$
<code>\$\$\idotsint_V \mu(u_1,\dots,u_k) \, du_1 \dots du_k</code>	$\int \dots \int_V \mu(u_1,\dots,u_k) \, du_1 \dots du_k$
<code>\$\$\oint_V f(s) \, ds</code>	$\oint_V f(s) \, ds$
<code>\$\$\oiint_V f(s,t) \, ds \, dt</code>	$\oiint_V f(s,t) \, ds \, dt$

[Open an example in ShareLaTeX](#)

Sums and products

Like integral, sum expression can be added using the

`\sum_{lower}^{upper}`

command.

LaTeX code	Output
Sum <code>\sum_{n=1}^{\infty} 2^{-n} = 1</code> inside text	Sum $\sum_{n=1}^{\infty} 2^{-n} = 1$ inside text
<code>\$\$\sum_{n=1}^{\infty} 2^{-n} = 1\$\$</code>	$\sum_{n=1}^{\infty} 2^{-n} = 1$

In similar way you can obtain expression with product of a sequence of factors using the

`\prod_{lower}^{upper}`

command.

LaTeX code	Output
Product <code>\prod_{i=a}^b f(i)</code> inside text	Product $\prod_{i=a}^b f(i)$ inside text
<code>\$\$\prod_{i=a}^b f(i)\$\$</code>	$\prod_{i=a}^b f(i)$

[Open an example in ShareLaTeX](#)

Limits

Limit expression can be added using the

`\lim_{lower}`

command.

LaTeX code	Output
Limit <code>\lim_{x\to\infty} f(x)</code> inside text	Limit $\lim_{x\rightarrow\infty} f(x)$ inside text
<code>\$\$\lim_{x\to\infty} f(x)\$\$</code>	$\lim_{x\rightarrow\infty} f(x)$

[Open an example in ShareLaTeX](#)

Integer and sum limits improvement

In *inline* math mode the integral/sum/product lower and upper limits are placed right of integral symbol. Similar is for limit expressions. If you want the limits of an integral/sum/product to be specified above and below the symbol in *inline* math mode, use the `\limits` command before limits specification.

LaTeX code	Output
Integral <code>\int_a^b x^2 dx</code> inside text	Integral $\int_a^b x^2 dx$ inside text
Improved integral <code>\int\limits_a^b x^2 dx</code> inside text	Improved integral $\int_a^b x^2 dx$ inside text
Sum <code>\sum_{n=1}^{\infty} 2^{-n} = 1</code> inside text	Sum $\sum_{n=1}^{\infty} 2^{-n} = 1$ inside text
Improved sum <code>\sum\limits_{n=1}^{\infty} 2^{-n} = 1</code> inside text	Improved sum $\sum_{n=1}^{\infty} 2^{-n} = 1$ inside text

Moreover, adding `\displaystyle` beforehand will make the symbol large and easier to read.

On the other hand, `\mathlarger` command (provided by `relsize` package) is used to get bigger integral symbol in display.

`\int\frac{1}{2}dx - \mathlarger{\int\frac{1}{2}dx}`

$$\int \frac{1}{2} dx - \mathlarger{\int \frac{1}{2} dx}$$

[Open an example in ShareLaTeX](#)

Further reading

For more information see

- Mathematical expressions
- Subscripts and superscripts
- Fractions and Binomials
- Display style in math mode