

1 New mathematical function

For example *cond*

```
\DeclareMathOperator{\cond}{cond}
```

cond

Note: Can be used only in preamble.

2 For adding .py files

```
% For adding .py files
```

```
\usepackage{listings}
```

```
% Example
```

```
\section*{Übung 3: \textit{LR-Zerlegung}}
```

```
{\footnotesize \lstinputlisting[language=Python,frame=single]  
  {../../PycharmProject/Blatt_06/Aufgabe_3.py}}
```

3 New command / Redefine a command

```
% New variable
```

```
\newcommand{\blatt}{8}
```

```
\textbf{Example: \blatt}
```

```
% Redfine variable
```

```
\renewcommand{\blatt}{9}
```

```
\textbf{Example: \blatt}
```

Example: 8

Example: 9

3.1 Command with multi arguments

```
\newcommand{\tup}[2]{\ensuremath{\langle \langle \text{\#1}, \text{\#2} \rangle}}  
$\tup{test1}{test2}$
```

$\langle test1, test2 \rangle$

4 Cicled numbers (using tikz)

4.1 with aligment

```
% Circled number
```

```
\usepackage{tikz}
```

```
\newcommand*\circled[1]{\tikz[baseline=(char.base)]{
```

```
\node[shape=circle,draw,inner sep=2pt] (char) {#1};}}
\circled{1} \circled{2} \circled{3}
```

① ② ③

4.2 out of alignment

```
\textcircled{1}
```

①

5 Equal with def

```
% Equal with def
\newcommand\myeq{\stackrel{\mathclap{\normalfont\mbox{def}}}{=}}
$ 1 \myeq 2 $
```

$$1 \stackrel{\text{def}}{=} 2$$

6 Text over sign stackrel

```
% Text over sign
$ A \stackrel{\text{text}}{\approx} B $
```

$$A \stackrel{\text{text}}{\approx} B$$

7 Overbrace with text

```
$ \overbrace{a+b+c}^d \quad \underbrace{a+b+c}_d $
```

$$\overbrace{a+b+c}^d \quad \underbrace{a+b+c}_d$$

8 hrule

```
\vspace{1ex}\hrule\vspace{1ex}
```

9 Font

```
% This changes the default font family to sans-serif
\renewcommand{\familydefault}{\sfdefault}
```

10 Multi line comment

```
\iffalse  
\dots  
\fi
```

11 Color

```
{\color{red} colored text!!}
```

colored text!!

12 Symbolic footnotes

```
% Symbolic footnotes  
\renewcommand{\thefootnote}{\fnsymbol{footnote}}  
test\footnote{test}
```

test*

Other options:

```
\arabic, \Roman, \roman, ...
```

See [sharelatex footnotes](#)

13 Hyperref PDF-Links

```
Test\label{test}  
Go to \ref{test}
```

Test

Go to 13

To generate **PDF-bookmarks** for each section click the Rebuild button three times to generate link files and update references.

Note: sections must be numbered.

Links:

See more at [Bookmarks PDF](#)

See more at Wikibooks [L^AT_EX- Hyperref](#)

*test

14 Suppress sectionnumbering

No need to write `section*` each time to avoid section numbering.

```
% Suppress sectionnumbering
\makeatletter
\renewcommand\@secntformat[1]{}
\makeatother
```

15 Lists

15.1 With letters

```
\renewcommand{\theenumi}{\alph{enumi}}
```

- a. first
- b. second
- c. third

16 Framed

```
\begin{framed}
    framed text using framed package
\end{framed}
```

framed text using framed package

17 Cases

```
\begin{cases}
    math & \& math \\
    math & \& math
\end{cases}
```

Example:

$$c'' : E \rightarrow \mathbb{R} \text{ mit } c''(e) = \begin{cases} 2c(e) & , \text{ falls } e = (v, w) \text{ mit } v \in S, w \in V \setminus S \\ c(e) & , \text{ sonst} \end{cases}$$

Note: only one alignment symbol `&` is allowed in each case

Tip: use spacing like `quad` before case condition

18 Include another latex file

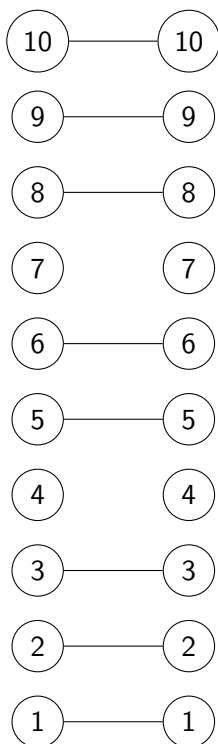
```
\input{another_file}
```

Hi from another file :P

Note: using include instead of input will generate a new page.

19 If with xifthen package

```
\begin{tikzpicture}
\foreach \x in {1,...,10}
{ \node[circle,draw] (\x 1) at (0,\x) {\x};
  \node[circle,draw] (\x 2) at (2,\x) {\x};
  \ifthenelse{\NOT \x = 4 \AND \NOT 7 = \x}{\draw (\x 1) -- (\x 2);}{}
}
\end{tikzpicture}
```



20 Better graphics package for includegraphics

Like avoid showing file name in graph

Solve space in filename issue

```
usepackage{grffile}
```

21 Indent env.

```
\usepackage{enumitem}

\setlist[description]{leftmargin=\parindent,labelindent=\parindent}
left aligned text
\begin{description}
  \item[One] first item
  \item[Two] second item
  \item[Three] third item
\end{description}

left aligned text

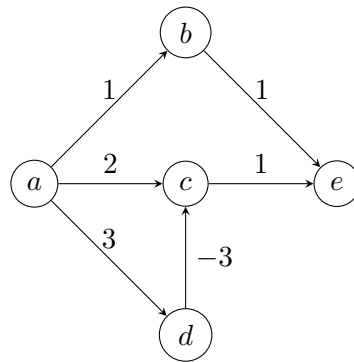
One first item

Two second item

Three third item
```

22 Sample TikZ Diagram

```
\tikzset{>=stealth}
\tikzset{every node/.style={distance=.3cm,draw,circle,fill=none}}
\tikzset{label/.style={draw=none,rectangle,fill=none}}
\begin{center}
\begin{tikzpicture}[->]
  % Nodes
  \node (a) at (0,0) {$a$};
  \node (b) at (2,2) {$b$};
  \node (c) at (2,0) {$c$};
  \node (d) at (2,-2) {$d$};
  \node (e) at (4,0) {$e$};
  % Edges
  \draw (a) to node [label,above] {$1$} (b);
  \draw (a) to node [label,above] {$2$} (c);
  \draw (a) to node [label,above] {$3$} (d);
  \draw (d) to node [label,right] {$-3$} (c);
  \draw (b) to node [label,above] {$1$} (e);
  \draw (c) to node [label,above] {$1$} (e);
\end{tikzpicture}
\end{center}
```



23 Generate ipsum dummy text

See more textblog

```

\usepackage{lipsum}
\lipsum
\lipsum[x]
\lipsum[x-y]

```

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.

24 Force a column break in multicols

See Stakeexchange

```
\usepackage{multicol}

\begin{multicols}{2}
  \lipsum[1]
\vfill
\columnbreak
  \lipsum[1-2]
\end{multicols}
```

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.

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.

25 Make your own package

Write your own command such as `\newcommand` or `\newenvironment` in their own `.sty` file (example `my_commands.sty`) and then use it in your document `\usepackage{my_commands}`.

Example:

```
\newcommand{\leftright}[2]{
  \begin{flushleft}
    #1
    \begin{flushright}
      #2
    \end{flushright}
  \end{flushleft}
}
```

Result:

```
\leftright{left}{right}
```

left

right

26 Bibliography

Source Bibliography management in LaTeX

```
\cite{latexcompanion}
```

```
\bibliographystyle{unsrt}
```

```
\bibliography{sample}
```

For computer science papers use `\bibliographystyle{ieeetran}`

This is an example of BibTeX using in bibliography management. Three items are cited: *The L^AT_EX Companion* book [1], the Einstein journal paper [2], and the Donald Knuth's website [3]. The L^AT_EX related items are [1, 3].

References

- [1] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The L^AT_EX Companion*. Addison-Wesley, Reading, Massachusetts, 1993.
- [2] Albert Einstein. Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]. *Annalen der Physik*, 322(10):891–921, 1905.
- [3] Donald Knuth. Knuth: Computers and typesetting.

26.1 Show all bib entries without cite command

Use: `\nocite{*}`

27 Verbatim environment

- Environment

```
\begin{verbatim}  
...
```

- Inline

```
\verb|...|
```