

## 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 \{#1\}, \{#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<sup>A</sup>T<sub>E</sub>X- Hyperref](#)

---

\*test

## 14 Suppress section numbering

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

```
% Suppress section numbering
\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}
```

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

## 18 Include another latex file

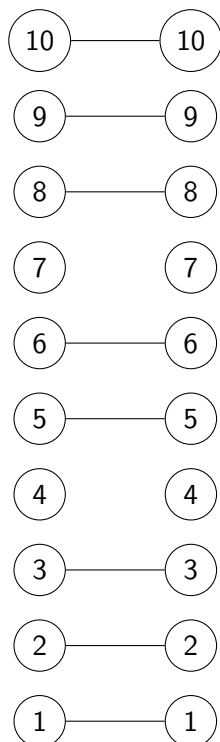
```
\input{another_file}
```

Hi from another file :P

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

## 19 If with xifthen packge

```
\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

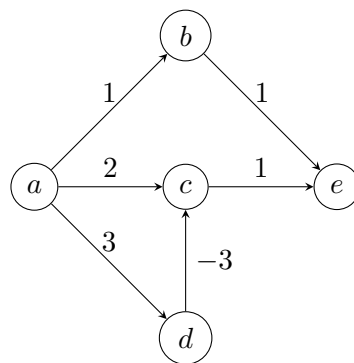
**Three** third item

## 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.