LaTeX eBook

IN Examples

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Contents

1 Math Tips

1.1 Auto-resizing equation

$$\dot{\rho} = \frac{x^3}{45a^9 - 23b}$$

```
\documentclass{article}
\usepackage{amsmath}
\usepackage{graphicx}

\begin{document}
\begin{equation*}\label{eq1}
\resizebox{.4\textwidth}{!}{ % change .4 to 0.5...
$\dot{\rho}=\dfrac{x^3}{45a^9-23b}$}
\end{equation*}
\end{document}
```

1.2 Form for simplest calculation

Fill with number
if it does't work try another PDF viewer

a:

b:

c:

$\sum =$ 0

```
\documentclass{article}
\usepackage{hyperref}

\begin{document}
\newcommand{\sss}[1]{this.getField("#1").value}
\begin{Form}
\noindent%
Fill with number\\

\TextField[name=a]{a:} \\

\TextField[name=b]{b:} \\

\TextField[name=c]{c:} \\
\noindent%
$\sum = $ \TextField[name=AvgStat, calculate={
  event.value = (
    \sss{a} +
    \sss{b} +
    \sss{c}) ;
}, readonly, value=0]{}
\end{Form}
\end{document}
```

1.3 Equation in the form of steps

$$\frac{n_0}{n_1} = q_1 + \cfrac{1}{q_2 + \cfrac{1}{q_3 + \cfrac{1}{q_4 + \ddots + \cfrac{1}{q_{k-1} + \cfrac{1}{q_k}}}}}$$

```
\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}

\begin{document}
\[
  \frac{n_0}{n_1} = q_1 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_2 + \dfrac{\makebox[\mywd][l
      ↪ ]{$1$}}
  {\makebox[\mywd][l]{$q_3 + \dfrac{\makebox[\mywd][l
      ↪ ]{$1$}}
  {\makebox[\mywd][l]{$q_4 +
   \raisebox{-6pt}{$\ddots$}
   \raisebox{-12pt}{+$\dfrac{\makebox[\mywd][l]{$1\
       ↪ kern30pt$}}
  {q_{k-1} + \dfrac{1}
  {q_k}}$}$}}$}}$}}
\]
\end{document}
```

1.4 One number for multiline equation

$$\begin{aligned}
x_{ij} &= d_{ijk}E_k, \\
x_{ij} &= \varsigma_{ijk}H_k, \\
x_{ij} &= s_{ijkl}X_{kl}, \\
x_{ij} &= \xi_{ij}\delta p, \\
x_{ij} &= \alpha_{ij}\delta T
\end{aligned} \tag{1}$$

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
\begin{equation}
\begin{aligned}
x_{ij} &= d_{ijk}E_k, \\
x_{ij} &= \varsigma_{ijk}H_k,\\
x_{ij} &= s_{ijkl}X_{kl},\\
x_{ij} &= \xi_{ij}\delta p,\\
x_{ij} &= \alpha_{ij}\delta T
\end{aligned}
\end{equation}
\end{document}
```

1.5 Matrix in standalone documentclass

$$\begin{matrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{matrix}$$

```
\documentclass[preview,border={-5cm 0cm -5cm -0.1cm}]{
    ↪ standalone}
\usepackage{amsmath}

\begin{document}
\begin{equation*}
\begin{matrix}
a_{11} & a_{12} & a_{13} \\
a_{21} & a_{22} & a_{23} \\
a_{31} & a_{32} & a_{33} \\
\end{matrix}
\end{equation*}
\end{document}
```

1.6 Multiple lines, one centered label

$$\begin{aligned} A &= \frac{\pi r^2}{2} \\ &= \frac{1}{2}\pi r^2 \end{aligned} \tag{2}$$

```
\begin{equation} \label{eq1}
\begin{split}
A & = \frac{\pi r^2}{2} \\
 & = \frac{1}{2} \pi r^2
\end{split}
\end{equation}
```

1.7 Array as a fraction

$$I-IV-V^{\substack{6-4\\4-3\\6-4\\4-3}}-I-cadence$$

$$I-IV-V^{\genfrac{}{}{0pt}{}{6-4}{4-3}}-I-cadence$$

$$I-IV-V^{\begin{array}{c}6-4\\4-3\end{array}}-I-cadence$$

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
$I-IV-V^{\substack{6-4\\4-3\\6-4\\4-3}}-I-cadence$ \\

$I-IV-V^{\genfrac{}{}{0pt}{}{6-4}{4-3}}-I-cadence$ \\

$I-IV-V^{\begin{array}{c}6-4\\4-3\end{array}}-I-
    ↪ cadence$
\end{document}
```

1.8 Aligning equations inbetween text

qqq

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
\begin{alignat*}{2}
\intertext{Photochemical:}
K_{UV} &: M[1]& &\ch{-> M^{*}}[1]
\intertext{Catalyzed:}
K_I &: I& &\ch{->} 2R \\
K_S &: R + M [1]& &\ch{-> RM^{*}}[1]
\end{alignat*}
\end{document}
```

1.9 Equation: boxed split inside align

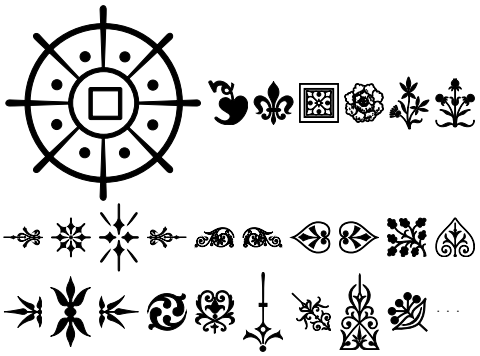
$$A = B + C + D$$

$$\boxed{\begin{aligned} A = {} & B\_is\_long \\ & + C\_is\_long\_too \\ & + D\_is\_long\_too \end{aligned}} \tag{1}$$

```
\begin{document}
\begin{align}
\begin{split}
A ={}& B + C + D
\end{split}\nonumber\\
\mathrlap{\boxed{\phantom{\begin{gathered}A
    ↪  = {}+ C\_is\_long\_too\\A\\A\end{
    ↪ gathered}}}}
\hspace{\dimexpr\fboxsep+\fboxrule-0.4pt}
\begin{split}
A ={}& \phantom{{}+{}} B\_is\_long\\
& + C\_is\_long\_too\\
& + D\_is\_long\_too
\end{split}
\end{align}
\end{document}
```

2 Text, Symbols

2.1 Ornaments from \pgfornament



```
\documentclass[varwidth]{standalone}
\usepackage[object=vectorian]{pgfornament}
\usepackage{tikz}

\begin{document}
\pgfornament[width=5cm]{4} \pgfornament[width=1cm]{5}
\pgfornament[width=1cm]{6} \pgfornament[width=1cm]{7}
\pgfornament[width=1cm]{8} \pgfornament[width=1cm]{9}
\pgfornament[width=1cm]{10} \pgfornament[width=1cm]{11}
\pgfornament[width=1cm]{12} \pgfornament[width=1cm]{13}
\pgfornament[width=1cm]{14} \pgfornament[width=1cm]{15}
\pgfornament[width=1cm]{16} \pgfornament[width=1cm]{17}
\pgfornament[width=1cm]{18} \pgfornament[width=1cm]{19}
\end{document}
```

2.2 Wireframe rendering


```
\documentclass{article}
\usepackage{xcolor}
\usepackage{roboto}
\usepackage[outline]{contour}

\begin{document}
\roboto\huge\contourlength{.15em}
\contour{gray}{boxed}
\end{document}
```

2.3 Justifyed text

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list
6. Sixth item in a list
7. Seventh item in a list
8. Eighth item in a list
9. Ninth item in a list
10. Tenth item in a list

```
\documentclass{article}
\usepackage{blindtext}
\newcommand*\justify{%
  \fontdimen2\font=0.4em% interword space
  \fontdimen3\font=0.2em% interword stretch
  \fontdimen4\font=0.1em% interword shrink
  \fontdimen7\font=0.1em% extra space
  \hyphenchar\font=‘\-% allowing hyphenation
}
\begin{document}
\texttt{\justify\blindenumerate[10]}
\end{document}
```

2.4 Text under an underline

text $\underset{\text{text under line}}{\text{Some long Text}}$ text

```
\documentclass{standalone}
\usepackage{array}
%\setlength\extrarowheight{2pt}
\newcommand{\mycommand}[2]{\begin{tabular}[t]{@{} c @{}}
#1\\ \hline
#2
\end{tabular}}

\begin{document}
text \mycommand{Some long Text}{text under line} text
\end{document}
```

2.5 Various types of underlining

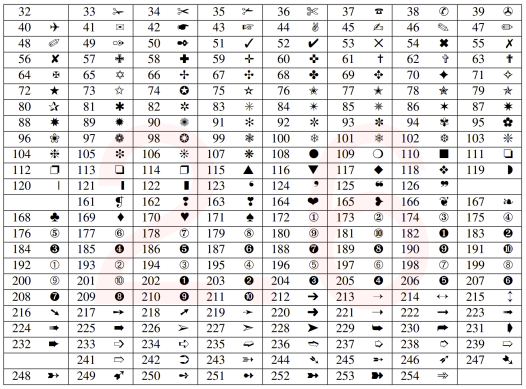
Some important text
Some urgent text
Some boat text
Some ~~wrong~~ text
Some removed text
Some dashing text
Some dotty text

```
Some \uline{important} text\\
Some \uuline{urgent} text\\
Some \uwave{boat} text\\
Some \sout{wrong} text\\
Some \xout{removed} text\\
Some \dashuline{dashing} text\\
Some \dotuline{dotty} text
```

```
\documentclass[14pt]{extreport}
\usepackage{ulem}

\begin{document}
\uline{important} \uuline{urgent}
\uwave{boat} \sout{wrong}
\xout{removed} \dashuline{dashing}
\dotuline{dotty}
\end{document}
```

2.6 Bullets Style



```
\documentclass{article}
\usepackage{pifont}

\begin{document}
\begin{itemize}
    \item[\ding{51}] Code 51
    \item[\ding{56}] Code 56
    \item[\ding{43}] Code 43
    \item[\ding{118}] Code 118
    \item[\ding{170}] Code 170
\end{itemize}
\ding{46} \ding{70} \ding{57} \ding{98} \ding{96}
\end{document}
```

2.7 Change the title of \tableofcontents


```
\documentclass{article}
\renewcommand{\contentsname}{Whatever}

\begin{document}
  \tableofcontents
  \subsection{\hll{Section}
  \subsection{\hll{Subsection}
\end{document}
```

3 Code, listings, minted . . .

3.1 Code listing using minted in beamer


```
\documentclass{beamer}
\usepackage{tcolorbox}
\tcbuselibrary{minted,skins,breakable}
\newtcblisting{pythoncode}[2][]{
  listing engine=minted, breakable, colback=bg,
  colframe=black!70, listing only,
  minted style=colorful, minted language=python,
  minted options={numbersep=3mm,texcl=true,#1},
  left=5mm,enhanced,
  overlay={\begin{tcbclipinterior}\fill[black!25] (frame.
      ↪ south west)
rectangle ([xshift=5mm]frame.north west);\end{
    ↪ tcbclipinterior}},
#2,}
\begin{document}
\begin{frame}[fragile]
    \frametitle{Premature Optimization}
    \begin{pythoncode}[linenos=true,]{title=Python Code
        ↪ Example}
    import glob
    \end{pythoncode}
\end{frame}
\end{document}
```

3.2 "Zebra" style listing

```c
/**
* Prints Hello World.
**/
#include <stdio.h>

int main(void) {
   printf("Hello World!");
   return 0;
}
```

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{beramono}
\usepackage{listings}
\usepackage{xcolor}
\newcommand\realnumberstyle[1]{}
\makeatletter
\newcommand{\zebra}[3]{%
   {\realnumberstyle{#3}}%
   \begingroup
   \lst@basicstyle
   \ifodd\value{lstnumber}%
      \color{#1}%
   \else
      \color{#2}%
   \fi
      \rlap{\hspace*{\lst@numbersep}%
      \color@block{\linewidth}{\ht\strutbox}{\dp\strutbox}%
      }%
   \endgroup}
\makeatother
\begin{document}
\begin{lstlisting}[language=C,basicstyle=\ttfamily,
numberstyle=\zebra{green!35}{yellow!35},numbers=left]
/**
* Prints Hello World.
**/
#include <stdio.h>
int main(void) {
   printf("Hello World!");
   return 0;
}
\end{lstlisting}
\end{document}
```

3.3 Listing with russian language

```
print("English comment"); // English comment
print("Russian comment"); // Русский комментарий
```

```
\documentclass{article}
\usepackage[T2A]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage[russian]{babel}
\usepackage{listings}
\usepackage{xcolor}

\begin{document}
\lstset{ keepspaces=true,
backgroundcolor=\color{blue},
showstringspaces=false,
language=C,
extendedchars=\true,
framexrightmargin=0pt,
framexleftmargin=0pt,
framextopmargin=15pt,
framexbottommargin=15pt,
frame=tb, framerule=0pt,
basicstyle=\color{yellow}\ttfamily\small}

begin{lstlisting}% <<<<<<<<< add "/"
print("English comment"); // English comment
print("Russian comment"); // %here can be russian words
end{lstlisting}% <<<<<<<<< add "/"
\end{document}
```

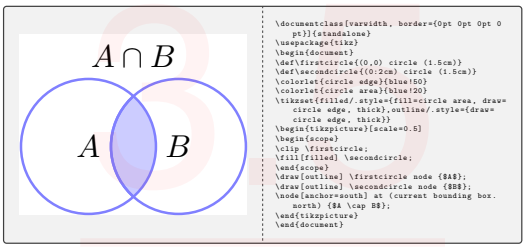
3.4 Listing with minted

```
1 int main(int ac, char *av[])
2 {
3   printf("Hello, World");
4   return 0;
5 }
```

```
\documentclass{article}
\usepackage[many]{tcolorbox}
\tcbuselibrary{minted}
\newtcblisting{mylisting}{
  colframe=cyan,
  colback=cyan!10,
  listing only,
  listing engine=minted,
  minted language=cpp,
  minted options={fontsize=\small,linenos,numbersep=3mm},
}

\begin{document}
\begin{mylisting}
some code
\end{mylisting}
\end{document}
```

3.5 Run LaTeX code inside and show result




```
\documentclass{standalone}
\usepackage[most]{tcolorbox}
\tcbset{sidebyside,width = 21cm,listing options={basicstyle
    ↪ =\small\ttfamily,breaklines=true}}

\begin{document}
\begin{tcblisting}{comment and listing, pdf comment, freeze
    ↪  pdf, compilable listing, run pdflatex, comment
    ↪ style={frame hidden,scale=2}}
\documentclass[varwidth, border={0pt 0pt 0pt 0pt}]{
    ↪ standalone}
\usepackage{tikz}
\begin{document}
\def\firstcircle{(0,0) circle (1.5cm)}
\def\secondcircle{(0:2cm) circle (1.5cm)}
\colorlet{circle edge}{blue!50}
\colorlet{circle area}{blue!20}
\tikzset{filled/.style={fill=circle area, draw=circle edge,
    ↪  thick},outline/.style={draw=circle edge, thick}}
\begin{tikzpicture}[scale=0.5]
\begin{scope}
\clip \firstcircle;
\fill[filled] \secondcircle;
\end{scope}
\draw[outline] \firstcircle node {$A$};
\draw[outline] \secondcircle node {$B$};
\node[anchor=south] at (current bounding box.north) {$A \
    ↪ cap B$};
\end{tikzpicture}
\end{document}
\end{tcblisting}
\end{document}
```