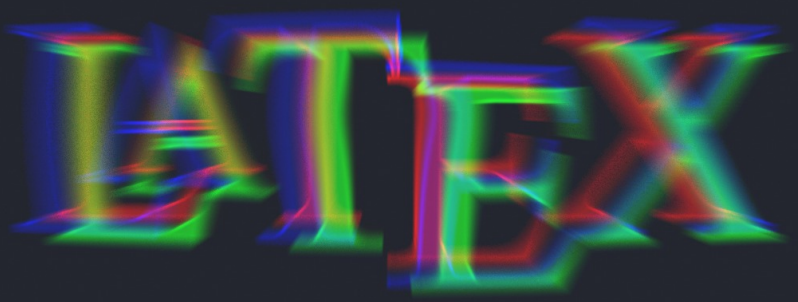
Latex in Examples



Thanks to me

Examples in this book is updated every week.

Contents

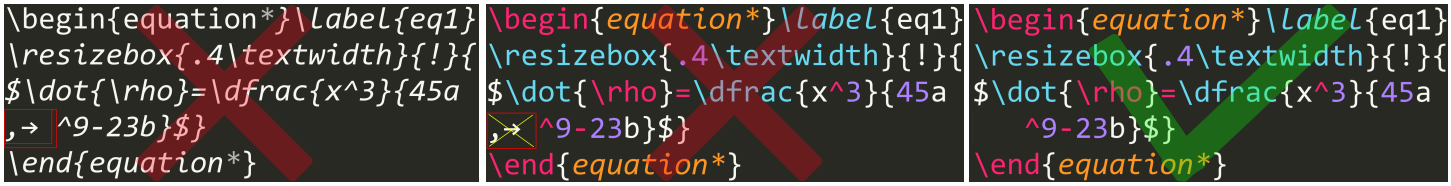


Figure 1: **how CORRECT paste code from example**

Chapter 1

Math Tips

1.1 Auto-resizing equation

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

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

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 Form for simplest calculation

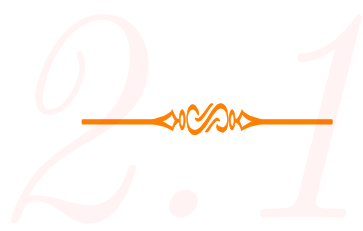
$$\frac{n_0}{n_1} = q_1 + \cfrac{1}{q_2 + \cfrac{1}{q_3 + \cfrac{1}{q_4 + \ddots + \cfrac{1}{q_k}}}}$$

```
\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}
\begin{document}
\[
  \frac{n_0}{n_1} = q_1 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_2 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_3 + \dfrac{\makebox[\mywd][l]{
  1   ↪ $1$}}
  {\makebox[\mywd][l]{$q_4 +
    \raisebox{-6pt}{$\ddots$}
    \raisebox{-12pt}{+$\dfrac{\makebox[\mywd][l]{$1\
        ↪ kern30pt$}}
  {q_{k-1} + \dfrac{1}
  {q_k}}$}$}}$}}$}}
\]
\end{document}
```

Chapter 2

Symbols

2.1 New section symbol



```
\usepackage[object=vectorian]{pgfornament}
\usepackage{lipsum,tikz}
\newcommand{\sectionlinetwo}[2]{%
\nointerlineskip \vspace{.5\baselineskip}\hspace{\fill}
{\color{#1}\resizebox{0.5\linewidth}{2ex}
{{{\begin{tikzpicture}
\node (C) at (0,0) {};\node (D) at (9,0) {};
\path (C) to [ornament=#2] (D);
\end{tikzpicture}}}}}%
\hspace{\fill}\par\nointerlineskip
\vspace{.5\baselineskip}}
%usage---> \sectionlinetwo{orange}{88}
```

Chapter 3

Code, listings, minted ...

Code listing using *minted* in beamer

Python Code Example

```
1  import glob
2
```

```
\documentclass{beamer}
\usepackage{amsmath}
\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}
```

Code listing using *minted* in beamer

```
/**
* 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}
```

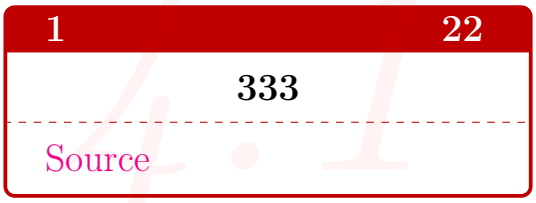
3.3

qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq

```
\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,% for spaces between rus. words
language=C,
extendedchars=\true,%for russian
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}
```

Chapter 4

Tables, boxes and so on




```
\PassOptionsToPackage{svgnames}{xcolor}
\documentclass[twocolumn,a4paper]{article}
\usepackage{tcolorbox}
\tcbuselibrary{skins,breakable}
\usetikzlibrary{shadings,shadows}%preambule
\begin{tcolorbox}[colback=white!100,colframe=red!75!black,width
    ↪ =7cm,righttitle=0.5cm, subtitle style={boxrule=0.4pt,
    ↪ colback=yellow!50!red!25!white},title= \bf{1}\hfill \bf{22}]
      \begin{center}\bf{333}\end{center}
      \tcblower
      \href{https://tools.ietf.org/doc/texlive-doc/latex/tcolorbox
          ↪ /tcolorbox.pdf}{URL}
\end{tcolorbox}
```

The quick brown fox jumps over the lazy dog.
The quick brown fox jumps over the lazy dog.

```
\usepackage{tcolorbox}
\newtcbox{\mybox}[1][red]{on line,
arc=0pt,outer arc=0pt,colback=#1!10!white,colframe=#1!50!black,
boxsep=0pt,left=1pt,right=1pt,top=2pt,bottom=2pt,
boxrule=0pt,bottomrule=1pt,toprule=1pt}
\newtcbox{\xmybox}[1][red]{on line,
arc=7pt,colback=#1!10!white,colframe=#1!50!black,
before upper={\rule[-3pt]{0pt}{10pt}},boxrule=1pt,
boxsep=0pt,left=6pt,right=6pt,top=2pt,bottom=2pt}
%usage---> \xmybox[YOUR_colour]{YOUR_text}
                %\mybox[YOUR_colour]{YOUR_text}
```

Here You can see more examples and learn something new.

```
\usepackage[many]{tcolorbox}
\newtcbox{\mylib}{enhanced,nobeforeafter,tcbox raise base,
    ↪ boxrule=0.4pt,top=0mm,bottom=0mm,
  right=0mm,left=4mm,arc=1pt,boxsep=2pt,before upper={\
      ↪ vphantom{dlg}},
  colframe=green!50!black,coltext=green!25!black,colback=green
      ↪ !10!white,
  overlay={\begin{tcbclipinterior}\fill[green!75!blue!50!white] (
      ↪ frame.south west)
    rectangle node[text=white,font=\sffamily\bfseries\tiny,rotate
        ↪ =90] {TYP} ([xshift=4mm]frame.north west);\end{
        ↪ tcbclipinterior}}}
\begin{document}

\mylib{recieve}
```

Table 1: **Caption**

Variant	res	Veriaty of waters f_0, res	C, res	L, res
5	1	2	1.26	5

table with the desired length, a command was also created to create a new cell view in the table.

```
\usepackage{graphicx}
\usepackage{tabularx}
\newcolumntype{Y}{>{\centering\arraybackslash}X}
\begin{document}
\begin{table}[h!]
\begin{center}
\caption{\textbf{Caption}}
  \begin{tabularx}{14cm}{|Y|Y|c|Y|Y|}
  \hline
  Variant & res & Veriaty of waters $f_0$, res & C, res & L, res\\
  \hline
  5 & 1 & 2 & 1.26 & 5\\
  \hline
  \end{tabularx}
\end{center}
\end{table}
```

1 2 3 ··· 4 5 6

```
\usepackage{tikz}
\usepackage[framemethod=TikZ]{mdframed}
\usepackage{xcolor}
\usetikzlibrary{calc}
\makeatletter
\newlength{\mylength}
\xdef\CircleFactor{1.1}
\setlength\mylength{\dimexpr\f@size pt}
\newsavebox{\mybox}
\newcommand*\circled[2][draw=blue]{\savebox\mybox{\vbox{\
    ↪ vphantom{WL1/}#1}}\setlength\mylength{\dimexpr\
    ↪ CircleFactor\dimexpr\ht\mybox+\dp\mybox\relax\relax
    ↪ }\tikzset{mystyle/.style={circle,#1,minimum height={\
    ↪ mylength}}} \tikz[baseline=(char.base)]
\node[mystyle] (char) {#2};}
\makeatother
\definecolor{amber}{rgb}{1.0, 0.75, 0.0}
\definecolor{babyblue}{rgb}{0.54, 0.81, 0.94}
usage --> \circled[fill=amber,draw=black]{1}
```

warning

Here is some text

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[most]{tcolorbox}
\definecolor{orang}{RGB}{255,155,0}
\newtcolorbox[auto counter,number within=section]{caja}[1][]{
enhanced jigsaw,colback=white,colframe=orang,coltitle=orang,
fonttitle=\bfseries\sffamily,
sharp corners,
detach title,
leftrule=10mm,
% What you need %%%%%%%%%%%
underlay unbroken and first={\node[below,text=black,anchor=east]
at ([xshift=-5.5pt]interior.base west) {\Huge \textbf{!}};},
%%%%%%%%%%%%%%%%%%%%%%%%%
breakable,pad at break=1mm,
#1,
code={\ifdefempty{\tcbtitletext}{}{\tcbset{before upper={\
    ↪ tcbtitle\par\medskip}}}},}
\begin{document}
\begin{caja}[title=warning]
The vertical alignment settings
\end{caja}
\end{document}
```

Sample text here.

A

```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{graphicx}
\begin{document}
\begin{tcolorbox}[enhanced,sharp corners,
width={5cm},
colback=white,
overlay={\node at (frame.south east) {\includegraphics[scale=0.1]{
    ↪ example-image-a}};} ]
Sample text here.
\end{tcolorbox}
\end{document}
```

all	in	cells
are	centered	vertically
and	horisontally	$\sum$

```
\documentclass{article}
\usepackage{float}
\usepackage{array, makecell}
\setcellgapes{5pt}

\begin{document}
\begin{table}[H]
\center
\makegapedcells
    \begin{tabular}{|c|c|c|c|}
    \hline
1&1&1&1\\ \hline
1&1&1&1\\ \hline
1&1&1&1\\ \hline

\end{tabular}
\end{table}

\end{document}
```

$$d_{n+1}\begin{vmatrix} a_{1,1} & \dots, a_{1,n} & 0 \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots\dots\dots & & \\ a_{1,1} & \dots, a_{1,n} & 0 \\ & & \\ a_{1,1} & \dots, a_{1,n} & 0 \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots\dots\dots & & \\ a_{1,1} & \dots, a_{1,n} & 0 \end{vmatrix} = 0$$

```
\documentclass[a4paper,14pt]{extreport}
\begin{document}
\begin{table}[]
\begin{tabular}{l|l c r|l}
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& \multicolumn{3}{l|}{\dotfill} & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
$d_{n+1}$ & & & = $\pm 2ad_n$ = 0 \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& \multicolumn{3}{l|}{\dotfill} & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
\end{tabular}
\end{table}
\end{document}
```

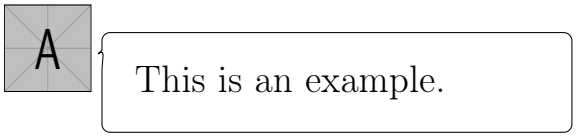
1	1	EVERY
1	1	CELL
1	1	CENTERED

```
\documentclass{article}
\usepackage[table]{xcolor}
\usepackage{nicematrix}
\NiceMatrixOptions{cell-space-top-limit=5pt,cell-space-bottom-
    ↪ limit=5pt}

\begin{document}
\begin{table}[htbp]
\centering
\begin{NiceTabular}{|c|c|c|}
\hline
\cellcolor{red}1& \cellcolor{green}1 & \cellcolor{black!10}1 \\ \
    ↪ hline
\cellcolor{orange}1 & \cellcolor{red!35}1 & \cellcolor{brown!50}1
    ↪ \\ \hline
\cellcolor{green!35}1 & \cellcolor{blue!45}1 & \cellcolor{yellow}1
    ↪ \\ \hline
\end{NiceTabular}
\end{table}
\end{document}
```

Chapter 5

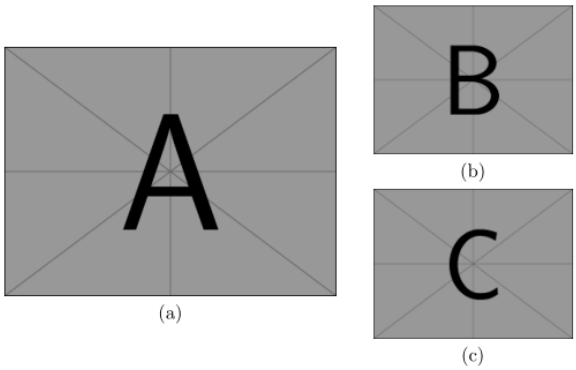
Figures

5.1




```
\usepackage{tikz}
\usepackage[framemethod=TikZ]{mdframed}
\usepackage{xcolor}
\usetikzlibrary{calc}
\makeatletter
\newlength{\mylength}
\xdef\CircleFactor{1.1}
\setlength\mylength{\dimexpr\f@size pt}
\newsavebox{\mybox}
\newcommand*\circled[2][draw=blue]{\savebox\mybox{\vbox{\
    ↪ vphantom{WL1/}#1}}\setlength\mylength{\dimexpr\
    ↪ CircleFactor\dimexpr\ht\mybox+\dp\mybox\relax\relax
    ↪ }\tikzset{mystyle/.style={circle,#1,minimum height={\
    ↪ mylength}}}
\tikz[baseline=(char.base)]
\node[mystyle] (char) {#2};}
\makeatother
\definecolor{amber}{rgb}{1.0, 0.75, 0.0}
\definecolor{babyblue}{rgb}{0.54, 0.81, 0.94}
```

5.2

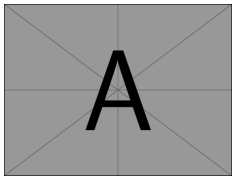


(a) (b) (c)

Figure 1: Caotion.

```
\documentclass{article}
\usepackage{graphicx}
\usepackage{subfig}
\begin{document}
\begin{figure}[htp]
\centering
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.5\linewidth]{example-image-a.
    ↪ png}}\\ (a)
\end{tabular}\qquad % some space
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-b.
    ↪ png}}\\ (b)
\\[0.1cm]
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-c.
    ↪ png}}\\ (c)
\end{tabular}
\caption{Caption.}
\end{figure}
\end{document}
```

5.3




```
\usepackage{graphicx}
\usepackage{tikz}
\begin{document}
\begin{tikzpicture}[overlay, remember picture]
\node[anchor=north west,xshift=4cm,yshift=-11cm]
at (current page.north west)
{\includegraphics[width=5.5cm]{example-image-a.png}};
\end{tikzpicture}
\end{document}
```

place image anywhere You want

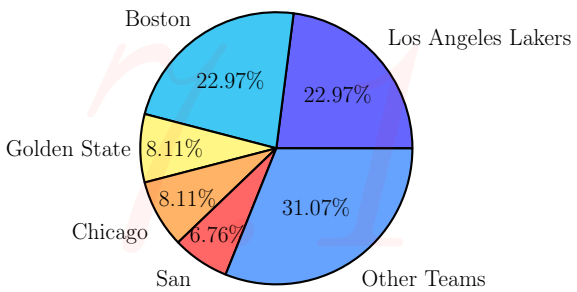
5.4

Chapter 6

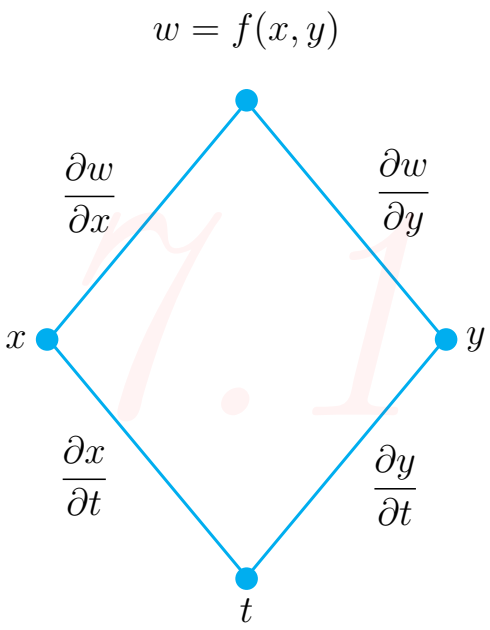
Numbering

Chapter 7

Plots, tikz, pie charts ...




```
\documentclass[border=0.2cm]{standalone}
\usepackage{pgf-pie}

\begin{document}

\begin{tikzpicture}
\pie{22.97/Los Angeles Lakers,
22.97/Boston Celtics,
8.11/Golden State Warriors,
8.11/Chicago Bulls,
6.76/San Antonio Spurs,
31.07/Other Teams}
\end{tikzpicture}

\end{document}
```




```
\documentclass[a4paper,14pt]{extreport}
\usepackage[left=1.5cm,right=1.5cm,
    top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{amsmath}


\usepackage{tikz}
\usetikzlibrary{shapes.geometric}

\begin{document}
\begin{tikzpicture}

\node[diamond,
font=\small,
line width=0.4mm,
scale=0.7,
    draw = cyan,
    %text = red,
    minimum width = 7.5cm,
    minimum height = 9cm] (d) at (0,0) { };
      \node [above=0.5cm] (a) at (d.90) {$w = f(x,y)$};
      \node [above=0.5cm,right=0.1cm] (b) at (d.45) {$\dfrac{\
          ↪ partial w}{\partial y}$};
      \node [above=0.5cm,left=0.1cm] (c) at (d.135) {$\dfrac{\
          ↪ partial w}{\partial x}$};
      \node [left=0.1cm] (dd) at (d.180) {$x$};
      \node [right=0.1cm] (e) at (d.0) {$y$};
      \node [below=0.1cm] (f) at (d.270) {$t$};
      \node [below=0.9cm,right=-0.3cm] (g) at (d.-30) {$\dfrac{\
          ↪ partial y}{\partial t}$};
      \node [below=0.5cm,left=0.1cm] (h) at (d.220) {$\dfrac{\
          ↪ partial x}{\partial t}$};
      \node at (d.90) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.180) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.0) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.270) [cyan,circle,fill,inner sep=3pt]{};
\end{tikzpicture}
\end{document}
```