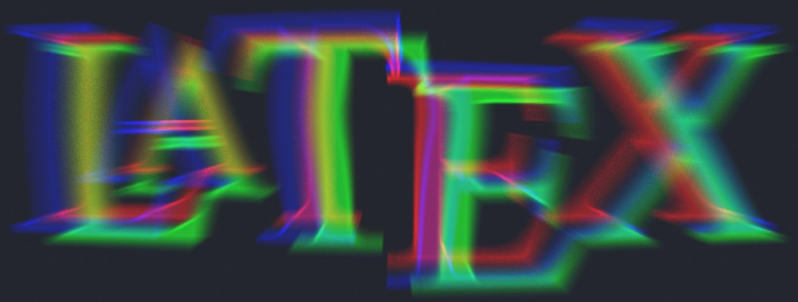
Latex in Examples



Thanks to me

Examples in this book is updated every week.

Contents

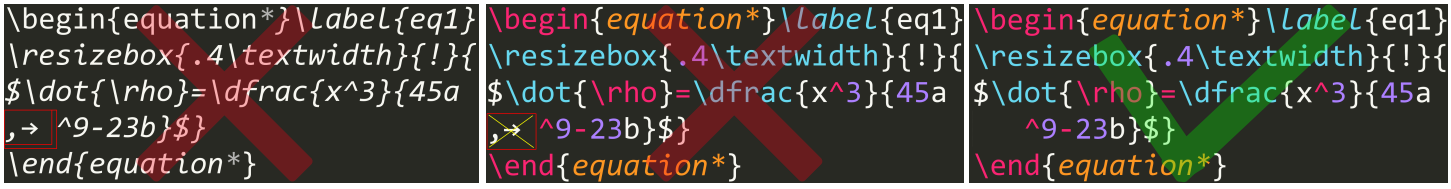


Figure 1: **how CORRECT paste code from example**

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

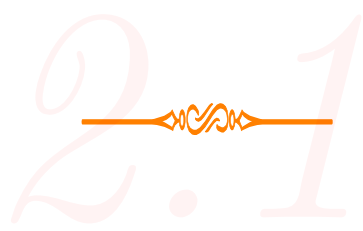
$$\frac{n_0}{n_1} = q_1 + \cfrac{1}{q_2 + \cfrac{1}{q_3 + \cfrac{1}{q_4 + \ddots + \cfrac{1}{q_{k-1} + \cfrac{1}{q_k}}}}}$$

```
\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}
```

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


```
\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

1 **22**

333

Source

```
\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}
```

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

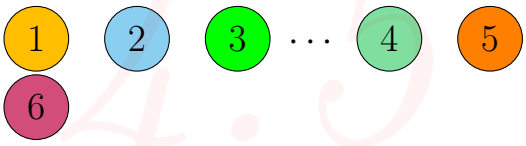
Here You can see more examples and learn something new.

```
\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

```
\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}
```




```
\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}
```

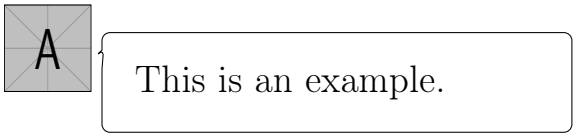
Enum	Example	Description
1	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2a	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2b	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.

```
\documentclass{article}
\usepackage[left=1.5cm,right=1.5cm,
top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{float}
\usepackage{array, makecell}
\usepackage[utf8]{inputenc}
\usepackage{lipsum}
\usepackage{booktabs}

\usepackage{multirow}
\usepackage{pdflscape}
\usepackage{longtable, array}


\begin{document}

\begin{landscape}
\begin{longtable}{@{} *{2}{m{.15\paperwidth}} *{1}{m{.40\
    ↪ paperwidth}} @{}}
\endfirsthead
\endhead
\toprule
\textbf{Enum} & \textbf{Example} & \textbf{Description} \\
\midrule
1 & test & \lipsum[50]\\
\midrule
2a & test & \lipsum[50]\\
2b & test & \lipsum[50]\\
\bottomrule
\end{longtable}
\end{landscape}

\end{document}
```

Chapter 5

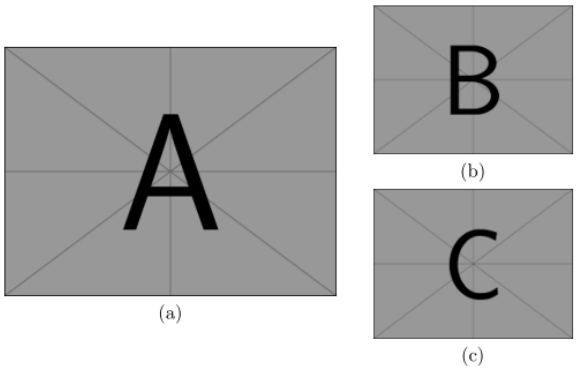
Figures

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

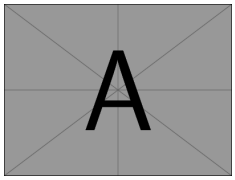


(a) (b) (c)

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

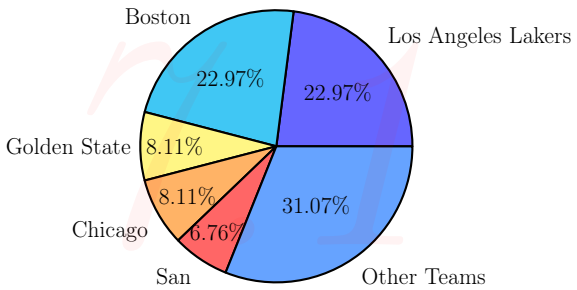
5.4

Chapter 6

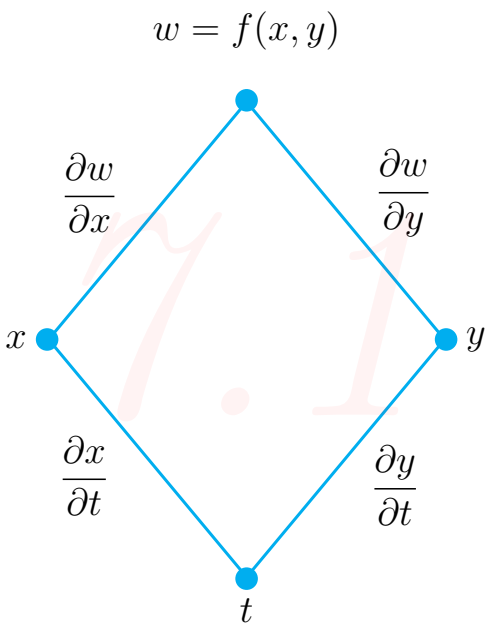
Numbering

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}
```