Getting Started with LaTeX

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Chapter 1

Commands

1.1 Article/Book Partitions

1. part
2. chapter
3. section
4. subsection
5. subsubsection
6. paragraph
7. subparagraph

1.2 Next Line

see this line.
this is next line in LaTeX.

now see this line and compare the space to previous line.

this is in continue of previous line.

Note

for changing all of document space between lines you can use from linespread global command. for more complete spacing between lines and words you can use spacing package.

hfill

Code:

```
start of line \hfill end of line \\
start of line \hfill middle of line \hfill end of line\\
start \hfill $\frac{1}{4}$ \hfill middle \hfill $\frac{3}{4}$ \hfill end
```

Output:

start of line end of line
start of line middle of line end of line
start $\frac{1}{4}$ middle $\frac{3}{4}$ end

1.3 noindent

Every where that you don't want first line indentation you can use noindent command.

1.4 addvspace

Consider this as first text,

This text is 2 centimeter lower than first text. This text has smallskip from previous. This text has medskip from previous. This text has bigskip from previous.

1.5 Size in Latex

Code:

```
{\tiny this is tiny} \\
{\scriptsize this is scriptsize} \\
{\footnotesize this is large} \\
{\small this is small} \\
{\normalsize this is normalsize}\\
{\large this is large}\\
{\Large this is Large}\\
{\LARGE this is LARGE}\\
{\huge this is huge}\\
{\Huge this is Huge}
```

Output:

this is tiny
this is scriptsize
this is large
this is small
this is normalsize
this is large
this is Large
this is LARGE
this is huge
this is Huge

1.6 Text Styling

Code:

```
\noindent
\emph{this is emph} \\
\textbf{this is textbf} \\
\textrm{this is textrm} \\
\textsf{this is textsf} \\
\texttt{this is textt} \\
\textmd{this is textmd} \\
\textit{this is textit} \\
\textsc{this is textsc} \\
\textsl{this is textsl} \\
{\verb "this can't be a latex command"}
```

Output:

this is emph
this is textbf
this is textrm
this is textsf
`this is textt`
this is textmd
this is textit
THIS IS TEXTSC
this is textsl
`this can't be a latex command`

1.7 Line On Text

Code:

```
\uline{this is uline} \\
\uuline{this is uuline} \\
\uwave{this is uwave} \\
\sout{this is sout} \\
\xout{this is xout} \\
```

Output:
this is uline
this is uuline
this is uwave
~~this is sout~~
~~this is xout~~

1.8 Text Color

Code:

```
\textcolor[rgb]{0.94,0.22,0.22}{this sentence is red.}\\
\textcolor{red}{also this is red again.}\\
\textcolor[rgb]{0.11,0.27,0.83}{this is blue.} \\
{\color{blue} this is blue and uses better command in code}\\
```

Output:
this sentence is red.
also this is red again.
this is blue.
this is blue and uses better command in code

1.9 Text Background Color

Code:

```
\colorbox{yellow}{this text background color is yellow :).}
```

Output:
this text background color is yellow :).

1.10 Page Color

Code:

```
\pagecolor{green}
    {\color{red}
        this page is black my friend.\\
        if you use color globally all of page color change.\\
    }

\newpage
\nopagecolor
```

Output:

this page is black my friend.
if you use color globally all of page color change.

1.11 footnote

we are going to put a footnote mark right here [i] as a LaTeXlesson.
we are going to put a footnote mark right here [ii] as a LaTeXlesson.
we are going to put a footnote mark right here [iii] as a LaTeXlesson.
we are going to put a footnote mark right here [iv] as a LaTeXlesson.
we are going to put a footnote mark right here [v] as a LaTeXlesson.

we are going to put a footnote mark right here [i] as a LaTeXlesson.
we are going to put a footnote mark right here [ii] as a LaTeXlesson.
we are going to put a footnote mark right here [iii] as a LaTeXlesson.

[i] The footnote text goes here.
[ii] The footnote text goes here.
[iii] The footnote text goes here.
[iv] The footnote text goes here.
[v] The footnote text goes here.
[i] The footnote text goes here.
[ii] The footnote text goes here.
[iii] The footnote text goes here.

Chapter 2

Environments

2.1 description

Code:

```
\begin{description}
  \item[item1] this is Item1 description
  \item[item2] this is item2 description
  \item[item3] this seems very cool no?
\end{description}
```

Output:

item1 this is Item1 description

item2 this is item2 description

item3 this seems very cool no?

2.2 center

Code:

```
\begin{center}
  this text is the center of line\\
  also this is the center of line\\
  this is new line\\
  what you want?\\
  new line?
\end{center}
```

Output:

this text is the center of line
also this is the center of line
this is new line

what you want?
new line?

2.3 itemize

Code:

```
\begin{itemize}
  \item this is first
  \item second
  \item third
  \item last
\end{itemize}
```

Output:

- this is first
- second
- third
- last

2.4 enumerate

Code:

```
\begin{enumerate}
  \item you can see number
  \item in the continue
  \item this is enumerate
\end{enumerate}
```

Output:

1. you can see number
2. in the continue
3. this is enumerate

2.5 flushleft

Code:

```
\begin{flushleft}
  this is flush left you see this text from left to right
\end{flushleft}
```

Output:

this is flush left you see this text from left to right

2.6 flushright

Code:

```
\begin{flushright}
  this is flush right you see this text from right to left
\end{flushright}
```

Output:

this is flush right you see this text from right to left

2.7 verse

Code:

```
\begin{verse}
  this is verse,\\
  I write hiphop here,\\
  yeah, yeah, yeah,
\end{verse}
```

Output:

this is verse,
I write hiphop here,
yeah, yeah, yeah,

2.8 minipage

Code:

```
\begin{minipage}{5cm}
  I write in minipage environment content (body part). I have no idea what is like
    this.
\end{minipage}
```

Output:
I write in minipage environment content (body part). I have no idea what is like this.

2.9 quote

Code:

```
\begin{quote}
  this is some quote from unknown man,\\ be human!
\end{quote}
```

Output:

this is some quote from unknown man,
be human!

2.10 quotation

Code:

```
\begin{quotation}
  this is quotation environment\\ what is difference between this and previous?
\end{quotation}
```

Output:

this is quotation environment
what is difference between this and previous?

2.11 verbatim

Code:

```
\begin{verbatim}
this is verbatim environment you see this part monospace and all word width are equal.
    \\
you can see the verbatim environment have automatic word wrap!\\
so if you want that you should use listings package.\\
in the verbatim environment you can't use latex command and environment,\\
see this: \phi
\end{verbatim}
```

Output:

```
this is verbatim environment you see this part monospace and all word width are equal. \\
you can see the verbatim environment have automatic word wrap!\\
so if you want that you should use listings package.\\
in the verbatim environment you can't use latex command and environment,\\
see this: \phi
```

2.12 array

Code:

```
$
\begin{array}{ccc}
  first & second & third \\
  something & chert & continue
\end{array}$
```

Output:

$$\begin{array}{ccc} first & second & third \\ something & chert & continue \end{array}$$

2.13 tabular

Code:

```
\begin{tabular}{c|c}
\hline
0 & nonhereditariness \\
\hline
1 & nonheretical \\
\hline
2 & nonheretically \\
\hline
3 & nonheritability \\
\hline
4 & nonheritable \\
\hline
5 & nonheritably \\
\hline
6 & nonheritor \\
\hline
7 & nonhero \\
\hline
8 & nonheroes \\
\hline
\end{tabular}
```

Output:

0	nonhereditariness
1	nonheretical
2	nonheretically
3	nonheritability
4	nonheritable
5	nonheritably
6	nonheritor
7	nonhero
8	nonheroes

Code:

```
\begin{tabular}{|c|||c||c|}
    \hline
  1 & 2 & 3 \\
  \hline
  \hline
  \hline
  6 & 5 & 4 \\
  \hline
  \hline
  7 & 8 & 9 \\
  \hline
\end{tabular}
```

Output:

1	2	3
6	5	4
7	8	9

Code:

```
\begin{tabular}{|l|l||l|}
  \hline
  some text & another text & third text \\
  \cline{1-1}
  \cline{3-3}
  4 & 5 & 6 \\
  \cline{1-2}
  7 & 8 & 9 \\
  \hline
\end{tabular}
```

Output:

some text	another text	third text
4	5	6
7	8	9

Code:

```
\begin{tabular}{|l|l|l|}
  \hline
  \multicolumn{2}{|l|}{some text} & 0 \\
  \hline
  1 & 2 & 3 \\
  \hline
  1 & 2 & 3 \\
  \hline
\end{tabular}
```

Output:

some text		0
1	2	3
1	2	3

Code:

```
\begin{tabular}{|c|c|c|c|p{5cm}|}
  \hline
  1 & 2 & 3 & 4 & This Macro Manual describes all WinEdt macro functions. Elements,
    rules and syntax of the macro language are described in depth. \\
  \hline
  1 & 2 & 3 & 4 & Most WinEdt menu items consist of a sequence of predefined macro
    functions separated by a semicolon ";". \\
  \hline
  1 & 2 & 3 & 4 & However, more sophisticated macros (e.g. Insert n x m Array) are
    normally defined in macro scripts. \\
  \hline
\end{tabular}
```

Output:

1	2	3	4	This Macro Manual describes all WinEdt macro functions. Elements, rules and syntax of the macro language are described in depth.
1	2	3	4	Most WinEdt menu items consist of a sequence of predefined macro functions separated by a semicolon ";".
1	2	3	4	However, more sophisticated macros (e.g. Insert n x m Array) are normally defined in macro scripts.

2.14 equation

(mathematic mode explain here!)

Code:

```
\begin{equation}\label{eq.secondlaw}
  F = m a\:.
\end{equation}
```

Output:

$$F = ma\,. \tag{2.1}$$

Code:

```
\begin{equation}\label{eq.greeks}
  \alpha \beta \lambda \mu \epsilon
\end{equation}
```

Output:

$$\alpha\beta\lambda\mu\epsilon \tag{2.2}$$

Code:

```
\begin{equation}
  \frac{a}{b} \times \frac{c}{d}=\frac{a \times c}{b \times d}
\end{equation}
```

Output:

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d} \tag{2.3}$$

Code:

```
\begin{equation}\label{eq.frac2}
  \frac{a}{1 + \frac{b}{c}}
\end{equation}
```

Output:

$$\frac{a}{1+\frac{b}{c}} \tag{2.4}$$

Code:

```
\begin{equation}\label{eq.sfrac}
  \sfrac{a}{b}
\end{equation}
```

Output:

$$a/b \tag{2.5}$$

Code:

```
\begin{equation}\label{eq.golden}
  \phi = \frac{1+\sqrt{5}}{2}
\end{equation}
```

Output:

$$\phi = \frac{1+\sqrt{5}}{2} \tag{2.6}$$

Code:

```
\begin{equation}\label{eq.combination}
  \binom{n}{m} = \frac{n!}{m!(n-m)!}
\end{equation}
```

Output:

$$\binom{n}{m} = \frac{n!}{m!(n-m)!} \tag{2.7}$$

2.15 displaymath

Code:

```
\begin{displaymath}
  this is math mode in \int_{2}^{3} f(x) + g(x) dx
\end{displaymath}
```

Output:

$$thisismathmodein \int_{2}^{3} f(x) + g(x) dx$$

2.16 inline math

Code:

```
this is $x^2\sqrt{x}$ and this is $\mathbf{x}$ for mathematics inline.
```

Output:
this is $x^2\sqrt{x}$ and this is $\mathbf{x}$ for mathematics inline.
Code:

```
\begin{equation}\label{eq.paranthes}
    \left( \right)
\end{equation}
```

Output:

$$() \tag{2.8}$$

Code:

```
\begin{equation}\label{eq.matrix1}
  \mathbf{A} = \left(\begin{array}{cc|c}
                          1 & 2 & 3 \\
                          4 & 5 & 6 \\
                          \hline
                          7 & 8 & 9
                      \end{array}
                      \right)
\end{equation}
```

Output:

$$\mathbf{A} = \left(\begin{array}{cc|c} 1 & 2 & 3 \\ 4 & 5 & 6 \\ \hline 7 & 8 & 9 \end{array}\right) \tag{2.9}$$

Code:

```
\begin{equation}\label{eq.matrix0}
  \mathbf{A} = \begin{bmatrix}
                          1 & 2 & 3 \\
                          4 & 5 & 6 \\
                          7 & 8 & 9
                      \end{bmatrix}
\end{equation}
```

Output:

$$\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \tag{2.10}$$

Code:

```
\begin{equation}\label{eq.matrix2}
  \mathbf{A} = \begin{pmatrix}
                          1 & 2 & 3 \\
                          4 & 5 & 6 \\
                          7 & 8 & 9
                      \end{pmatrix}
\end{equation}
```

Output:

$$\mathbf{A} = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \tag{2.11}$$

Code:

```
\begin{equation}\label{eq.matrix2}
  \mathbf{A} = \begin{vmatrix}
                          1 & 2 & 3 \\
                          4 & 5 & 6 \\
                          7 & 8 & 9
                       \end{vmatrix}
\end{equation}
```

Output:

$$\mathbf{A} = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix} \tag{2.12}$$

Code:

```
\begin{equation}\label{eq.matrix3}
  \mathbf{A} = \begin{Vmatrix}
                          1 & 2 & 3 \\
                          4 & 5 & 6 \\
                          7 & 8 & 9
                       \end{Vmatrix}
\end{equation}
```

Output:

$$\mathbf{A} = \begin{Vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{Vmatrix} \tag{2.13}$$

Code:

```
\begin{equation}\label{eq.matrix4}
  \bordermatrix{~ & a & b \cr
                c & 1 & 2 \cr
                d & 3 & 4 \cr}
\end{equation}
```

Output:

$$\bordermatrix{~ & a & b \cr c & 1 & 2 \cr d & 3 & 4 \cr} \tag{2.14}$$

2.17 align

Code:

```
\begin{align}\label{al.01}
  E &= K + U \\
  K &= \sfrac{1}{2} \;m v^2 \\
  U &= mgh
\end{align}
```

Output:

$$E = K + U \tag{2.15}$$
$$K = {}^1\!/_2\, mv^2 \tag{2.16}$$
$$U = mgh \tag{2.17}$$

2.18 figure

Code:

```
\begin{figure}
  \centering
  \includegraphics[width=10cm]{pdfs/gex.pdf}
  \caption{This is figure}\label{figure.x2-3-4}
\end{figure}
```

Output:

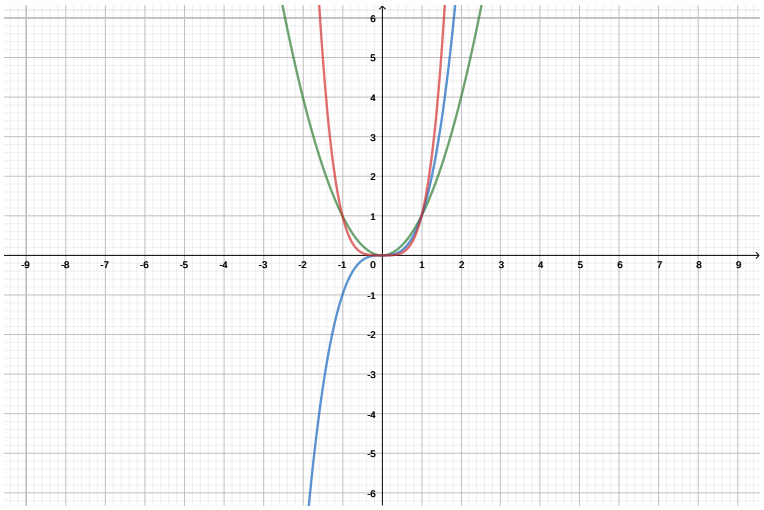

Figure 2.1: This is figure

Code:

```
\begin{figure}[h] % h is very important 'here'
  \centering
  \includegraphics[scale=0.3]{pdfs/gex2.pdf}
  \caption{This is figure}\label{figure.x2-3-4}
\end{figure}
```

Output:

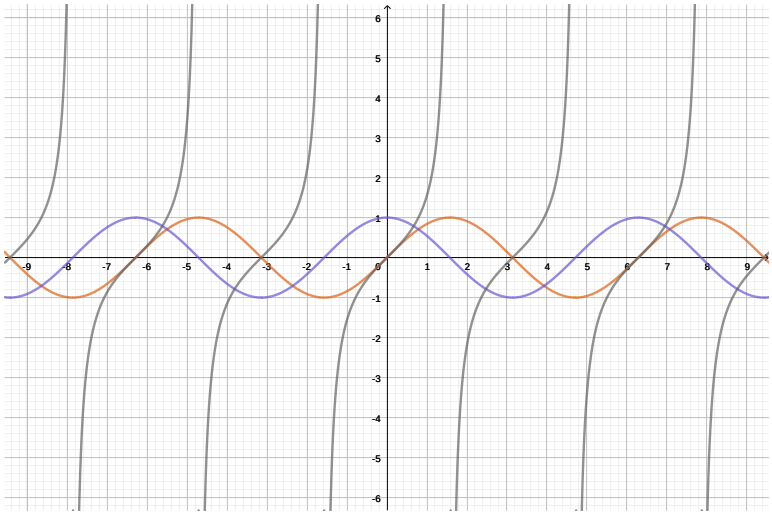

Figure 2.2: This is figure

Chapter 3

Notes

3.1 newcommand

Code:

```
%%% newcommand %%%
\newcommand{\abbas}{\textcolor[rgb]{0.65,0.92,0.14}{\textbf{\emph{ABBAS}}}}
\newcommand{\myc}{\noindent\textbf{{\color{blue} Code}:}}
\newcommand{\myo}{\noindent\textbf{{\color{blue} Output}:\\}}
\newcommand{\cool}[2]{{\colorbox{black}{{\color{red} #1}, {\color{green} #2}}}}
```

```
\abbas  is a new command! see the code! \\
\cool{ali}{abbas} is a new cool command! \\
use from it repeatedly \cool{first}{second}\\
\cool{Abbas}{Yazdanmehr}\\
```

Output:
ABBASis a new command! see the code!
ali abbas is a new cool command!
use from it repeatedly first second
Abbas Yazdanmehr

3.2 renewcommand

focus on the superscript[i]
renewcommand uses same syntax as newcommand.

[i] superscript