

Topic of the day!

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dd/mm/yy

1 First Section

1.1 Lists, Matrix and Table

1.1.1 Lists

- Lists are within `\begin{itemize}...\end{itemize}`
- Lists are listed using `\item` it displays a bullet point.
- Other ways to have lists are using `\begin{enumerate}...\end{enumerate}` environment. Which again uses `\item` to list content.

```
\begin{itemize}
\item line 1
\item line 2
\item line 3
\end{itemize}
```

1.1.2 Matrices

1. Matrices are displayed within math mode (\dots , \dots) or,
2. `\begin{Bmatrix}...\end{Bmatrix}`, `\begin{Pmatrix}...\end{Pmatrix}`,
`\begin{Vmatrix}...\end{Vmatrix}`
3. Each element of the matrix is sepearated using `&` and each row upto the last one is ended using the `linebreak(nextline command)\`
4. `Bmatrix` displays matrix within `{Curlybraces}`, `Pmatrix` displays it within (paranthesis), `Vmatrix` displays it as a Determinant.

```
\begin{equation}
\begin{pmatrix}
1 & 2 & 3 \\
4 & 5 & 6 \\
7 & 8 & 9
\end{pmatrix}
\end{equation}
```

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \quad (1)$$

1.1.3 Tables

Displaying tables is similar to matrices but with `\begin{tabular}{...}\end{tabular}` environment. The extra `{|c|c|c|}` is to specify the number of columns. It is delimited by Vertical bars `|` to denote borders/seperations.

```
\begin{center} %to center the table
\begin{tabular}{|c|c|c|}
\hline
Header & Header & Header \\
\hline
item & Item & Item \\
item & Item & Item \\
\hline
\end{tabular}
\end{center}
```

Header	Header	Header
item	Item	Item
item	Item	Item

1.2 Theorem, Lemma, Problem, Definition, proof and solution

All of these theorem, lemma etc., environments are defined in the preamble as follows,

```
\newtheorem{example}{Example}[section]
\newtheorem{problem}{Problem}[section]
\newtheorem{lem}{Lemma}[section]
\newtheorem{thm}{Theorem}[section]
\newtheorem{define}{Definition}[section]
```

Theorem 1.1. *content...*

proof. content...

□

```
\begin{thm}
content...
\begin{proof}[\textbf{proof}]
content...
\end{proof}
\end{thm}
```

Lemma 1.1. *content...*

proof. content...

□

```
\begin{lem}
content...
\begin{proof}[\textbf{proof}]
content...
\end{proof}
\end{lem}
```

Problem 1.1. *A dummy problem statement can be produced inside this environment. With inline equations or displaymode equations.*

solution. here we can have our solutions inside the beginproof...endproof environment,

We can have equations and other environments as needed.

□

```
\begin{problem}
A dummy problem statement can be produced inside this environment. With inline equations or
\begin{proof}[\textbf{solution}]
here we can have our solutions inside the begin{proof}...end{proof} environment,\
We can have equations and othen environments as needed.
\end{proof}
\end{problem}
```

Definition 1.1. *content...*

```
\begin{define}
content...
\end{define}
```