

Latex Certificate Course Instructions

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1 Mathematics

\LaTeX was original intended to write documents with mathematical content. And it has a special mode designated for mathematics called **math mode**. \LaTeX changes into or returns from math mode on each occurrence of $\$$ symbol.

```
1  ...
2  \begin{document}
3  ...
4  Let  $x$  be an integer.\\      Let  $x$  be an integer.
5  Let x be an integer.          Let x be an integer.
6  ...
7  \end{document}
```

Figure 1: math mode

In figure 1 at line 4, \LaTeX enters into math mode, prints x , then exits from math mode. But at line 5, \LaTeX prints x in text mode. It is better to write variable names and numbers in math mode.

1.1 Operators

Most of the symbols like $+$, $-$, $=$, $/$, $|$ are readily available in math mode. \LaTeX allows you to write complicated symbols and expressions using commands. The following are a few commonly used symbols,

Symbol	Command	Symbol	Command
\in	<code>\in</code>	\notin	<code>\notin</code>
\neq	<code>\neq</code>	\rightarrow	<code>\rightarrow</code>
\geq	<code>\geq</code>	\leq	<code>\leq</code>
\subset	<code>\subset</code>	\times	<code>\times</code>
\exists	<code>\exists</code>	\forall	<code>\forall</code>
\cap	<code>\cap</code>	\cup	<code>\cup</code>

Table 1: Basic Symbols

```

1  ...
2  \begin{document}
3  ...
4  $ 3 + 4 \times 5 = 23$\\
5  $ A \subset A \cup B$\\
6  Let $ f : X \to Y$
7  ...
8  \end{document}

```

Figure 2: Basic Expressions

1.1.1 Superscript and Subscript

In math mode, \wedge and $_$ are used for writing superscripts and subscripts respectively. Exponents are also written using superscripts. For example, $a^2 + b_3$ is written as $\$ a^2 + b_3 \$$. Again, 1^{st} May is written as $\$ 1^{\{st\}} \$$ May.

1.2 Greek Letters