Latex Certificate Course Instructions

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1 amsthm Package

The `amsthm` package is used for environments to writing definitions, lemmas and theorems. The current version of this package is 2.20.6 and is maintained by American Mathematical Society. The documentation is available at CTAN.

The `amsthm` package has following commands,

theoremstyle to change environment style — `plain`, `definition`, `remark`

newtheorem to create definition/ theorem/ remark environments

2 newtheorem Command

The `newtheorem` command is used to create environments for defintion/ theorem/ remark.

2.1 Definition Environment

The theoremstyle `definition` creates environments with boldface head text and normal body text.

```
\usepackage{amsthm}
\theoremstyle{definition}
\newtheorem{Def}{Definition}%
[section]
...
\begin{document}
...
\begin{Def}
A relation on $A$ is
a subset of $A \times A$.
\end{Def}
```

Definition 2.1. A relation on A is a subset of $A \times A$.

Figure 1: The Definition Environment

Warning : The `def` is a reserved word. Thus, you can use `def` for definition environment.

2.2 Theorem Environment

The theoremstyle `plain` creates environments with boldface head text and italic body text.

```
\usepackage{amsthm}
\theoremstyle{plain}
\newtheorem{thm}{Theorem}%
[section]
...
\begin{document}
...
\begin{thm}
Field of quotients of
an integral domain are
isomorphic.
\end{thm}
...
```

Theorem 2.1. *Field of quotients of an integral domain are isomorphic.*

Figure 2: The Theorem Environment

2.3 Remark Environment

The theoremstyle `remark` creates environments with italic head text and normal body text.

```
\usepackage{amsthm}
\theoremstyle{remark}
\newtheorem{Rmk}{Remark}%
[section]
...
\begin{document}
...
\begin{Rmk}
The set of all integers is
an integral domain.
\end{Rmk}
...
```

Remark 2.1. The set of all integers is an integral domain.

Figure 3: The Remark Environment

3 proof Environment

The `proof` environments has italic head (*proof*), normal body text and terminates with a QED symbol.

```
\begin{proof}
Let $X$ be a metric space
and $f$ be the Urysohn's
function. Then $f$ is not
uniformly continuous.
\end{proof}
```

Proof. Let X be a metric space and f be the Urysohn's function. Then f is not uniformly continuous. □

Figure 4: The Proof Environment