The tma Package*

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Abstract

The tma package provides macros and environments to assist in writing Tutor Marked Assessments (TMAs) for Open University courses.

Contents

*This document corresponds to tma v1.19, dated 2025-02-18.

1 Introduction

The tma package simplifies the creation of TMAs by providing an environment to encompass answers to questions commands to enumerate parts and subparts of those questions, and a set of macros facilitating mathematical entry based on the styles used by the Open University.

2 Compiling and installing tma

To compile the tma package:

Enter ⇒ `pdflatex tma.ins`

To compile the tma documentation:

Enter ⇒ `pdflatex tma.dtx`

(several times)

Enter ⇒ `makeindex -s gglo.ist -o tma.gls tma.glo`

Enter ⇒ `makeindex -s gind.ist tma`

Enter ⇒ `pdflatex tma.dtx`

(severl times)

The file `tma.sty` should be placed in an appropriate location within the TEX directory structure. For example in a directory such as `tex/latex/tma`.

3 Usage

To use the tma package, in its most basic form, it should be included in the preamble of your LATEX document:

```
\documentclass[a4paper,11pt]{article}
\usepackage{tma}
⋮
\begin{document}
⋮
\end{document}
```

3.1 Options

A number of options are available to modify the results of using the tma package. These should be included within the \usepackage declaration:

\usepackage[⟨*option,...*⟩]tma

The following options are available:

alph (*Opt*)
- [alph] (default) question numbering as 1(b)(iii);

roman (*Opt*)
- [roman] varies question numbering to sequence used by M381 i.e. 1(ii)(c);

cleveref (*Opt*)
- [cleveref] question numbering creates automatic referencing for use with cleveref package;

pdfbookmark (*Opt*)
- [pdfbookmark] add PDF bookmarks for each question using hyperref package; and

legacy (*Opt*)
- [legacy] enables old definitions of \vec and \C for backward compatibility.

3.2 Macros and environments

The tma package provides several valuable macros and environments, most documented here.

3.2.1 Document level commands

The document-level commands are intended for use within the document's preamble. They generally affect what appears on the title page and the headers/footers.

\myname

The most essential part of an assignment is to identify who it has been written by and what it has been written for. To this end, the \myname macro is used to specify your name: this should be your name as recorded with the University. As names are not unique, the Open University allocates a Personal Identification Number (or PIN) as a unique identifier for each student; this

\mypin should be declared with the \mypin macro. It is formed by a letter, followed by seven digits—or six digits and a letter X. Once the personal identification has been done, the module being worked needs to be declared, the course code
\mycourse of your module should be given with the \mycourse macro and the number of
\mytma the assignment using the \mytma macro. Note that this is just the assignment number; there is no need to include the characters TMA. The final document level command is used if you wish to set a specific date that will be displayed on
\setdate the compiled document title page; you may use \setdate. This will override the default of using the compile date.

Example:

```
%    \myname{Anthony Neil Other}
%    \mypin{A1234567}
%    \mycourse{M101} % The original Maths introduction module
%    \mytma{02} % TMA02
%    \setdate{March 2025}
%
```

3.2.2 Question environment commands

These commands are the ones that, though few, comprise the bulk of the body of the TMA answer content of a paper.

question (*env.*) Within a TMA, each question should be answered in a question environment. The question number is automatically incremented unless one is specified in the optional parameter. Since the question is presented as an environment, it is convenient to place each question in a separate file to be included in the main paper.

\qpart Often questions are comprised of multiple parts, therefore, \qpart indicates the start of a question part. It will set the part identifier within the left-hand margin space. Normally, the parts are lettered as a, b, c... unless the option roman has been given to the tma package when the parts are numbered as i, ii, iii... As with the actual questions, this is an auto-incrementing value unless an optional value is given. Note that the value should be numerical even if the parts are lettered or in Roman numerals. Each new question restarts the numbering at 1, which will be rendered as a or i as dictated by the options in effect.

There are occasions that the parts of questions may be further divided into sub-
\qsubpart parts; these may be declared using the \qsubpart macro. As with \qpart, this is set in the left margin and automatically incremented: an option to choose the sub-part number is also available. If a \qsubpart immediately follows a \pqart, both marginal markers will be set on the same line.

Note that question is an environment to be used with the \begin...\end structure, \qpart and \qsubpart are both macros that lay down titles in the margin and are designed to be used on a line on their own.

Example:

```
\begin{question}[⟨question number⟩]
⋮
\qpart[⟨part number⟩]
⋮
\qsubpart[⟨sub-part number⟩]
⋮
\end{question}
```

3.2.3 Mathematical symbology

Various mathematical symbols and elements are defined for convenience, working from the normal suggested formats used within Open University courses.

These commands are created in such a manner that they will work correctly in both text and maths modes.

\dd
\e
\ii

Differential operators The general advise for most OU modules is to use an upright letter 'd' when specifying differential variables, thus `\dd` is provided to allow simple accomodation of this. Similarly, Euler's number and the imaginary unit representation of $\sqrt{-1}$ are both usually given upright letters of 'e', (`\e`), and 'i', (`\ii`), respectively.

Example 1: Differential

Code:

```
In display mode, compare \dd\ with $d$:
\[
\frac{\dd^2 y}{\dd x^2} + x\frac{\dd y}{\dd x} + y = 2\sin(x)\\
\]
and in line mode $\e^{\ii x} = \cos(x) + \ii\sin(x)$
```

Result:

In display mode, compare d with d:

$$\frac{\mathrm{d}^2 y}{\mathrm{d}x^2} + x\frac{\mathrm{d}y}{\mathrm{d}x} + y = 2\sin(x)$$

and in line mode $\mathrm{e}^{\mathrm{i}x} = \cos(x) + \mathrm{i}\sin(x)$

Number sets Standard 'black-board' fonts are used to indicate a number of frequently designated groups of numbers.

\N `\N` represents all natural numbers;
\Z `\Z` represents all integers;
\Q `\Q` represents all rational numbers;
\R `\R` represents all real numbers; and
\Complex `\Complex` represents all complex numbers.

Example 2: Number sets

Code:

```
The relationship between number sets:
\begin{itemize}
\item \N\ (Natural numbers) $\subseteq \Z$ (Integers);
      every natural number is also an integer.
\item \Z\ (Integers) $\subseteq \Q$ (Rational numbers);
      every integer is also a rational number.
\item \Q\ (Rational numbers) $\subseteq \R$ (Real
      numbers); every rational number is also a real
      number.
\item \Complex\ (Complex numbers) $\supseteq \R$ (Real
      number); complex numbers include real numbers as
      a subset, since they can be represented by
      $a+\ii b$ where $a$ and $b$ are real numbers.
\end{itemize}
```

Result:

The relationship between number sets:

- $\mathbb{N}$ (Natural numbers) $\subseteq \mathbb{Z}$ (Integers); every natural number is also an integer.
- $\mathbb{Z}$ (Integers) $\subseteq \mathbb{Q}$ (Rational numbers); every integer is also a rational number.
- $\mathbb{Q}$ (Rational numbers) $\subseteq \mathbb{R}$ (Real numbers); every rational number is also a real number.
- $\mathbb{C}$ (Complex numbers) $\supseteq \mathbb{R}$ (Real number); complex numbers include real numbers as a subset, since they can be represented by $a + \mathrm{i}b$ where a and b are real numbers.

`\vect` `\ve`

Vector notation Two different vector representations are typically used on OU modules, there is the two, or more, letter with an over arrow version given with `\vect`; and the emboldened upright letter version `\ve`—the latter is commonly handwritten as an underlined letter.

Example 3: Vectors

Code:

```
Given a point $A$ at the co-ordinate $(6, 3)$ and a
point $B$ at the co-ordinate $(-4, 8)$, the vector
$\vect{AB}$ has a gradient of $\frac{8-3}{-4-6} =
\frac{5}{-10} = -\frac{1}{2}$
The standard unit vectors are \ve{i} and \ve{j}.
They are usually at right angles to each other.
```

Result:

Given a point A at the co-ordinate $(6, 3)$ and a point B at the co-ordinate $(-4, 8)$, the vector $\overrightarrow{AB}$ has a gradient of $\frac{8-3}{-4-6} = \frac{5}{-10} = -\frac{1}{2}$ The standard unit vectors are $\mathbf{i}$ and $\mathbf{j}$. They are usually at right angles to each other.

\st \nd \rd \nth **Ordinal indicators** The use of ordinal indicators is not specific to OU modules, but frequently is a useful element that is just inconvenient to produce.

So the standard four English ordinals are provided `\st`, `\nd`, `\rd`, and `\nth`, e.g. 1^{st}, 2^{nd}, 3^{rd}, and 4^{th}.

Note that the last ordinal is `\nth` not `\th`, the latter produces a thorn character, þ, and that only works if you have other than the default 7-bit font encoding (OT1).

\rect **Additional symbols** `\rect`, ▭, is defined particularly for the use of M208 people although others may find it useful.

Combinatoral notations There are two combinatoral forms that are commonly used in OU modules, the combination selecting r out of a total of n items where order does not matter, and the permutations of r out of n items were order matters.

\comb `{`⟨n⟩`}{`⟨r⟩`}`. This is equivelent to

$$ {}^{n}C_{r} = \frac{n!}{r!(n-r)!} $$

\perm `{`⟨n⟩`}{`⟨r⟩`}`. This is equivalent to

$$ {}^{n}P_{r} = \frac{n!}{(n-r)!} $$

Mathematical operators Additional mathematical operators are defined, again for convenience of entry.

- \re `\re` ↦ Re
- \im `\im` ↦ Im
- \Log `\Log` ↦ Log
- \Arg `\Arg` ↦ Arg
- \Wnd `\Wnd` ↦ Wnd
- \Res `\Res` ↦ Res
- \Ker `\Ker` ↦ Ker
- \Orb `\Orb` ↦ Orb
- \Stab `\Stab` ↦ Stab
- \Fix `\Fix` ↦ Fix

Derivatives There are three derivative forms defined specifically for speeding calculas entry and accuracy. One used the dx form and two use the partial, ∂x, form.

- \deriv `\deriv{`⟨y⟩`}{`⟨x⟩`}` ↦ $\frac{\mathrm{d}y}{\mathrm{d}x}$
- \pderiv `\pderiv{`⟨y⟩`}{`⟨x⟩`}` ↦ $\frac{\partial y}{\partial x}$
- \psderiv `\psderiv{`⟨y⟩`}{`⟨x⟩`}{`⟨z⟩`}` ↦ $\frac{\partial^2 y}{\partial x \partial z}$

4 Implementation

```
%% tma.sty
%% Copyright 2025 G. I. Riley <geoffr@adaso.com>
%
% This work may be distributed and/or modified under the
% conditions of the LaTeX Project Public License, either version 1.3
% of this license or (at your option) any later version.
% The latest version of this license is in
%   http://www.latex-project.org/lppl.txt
% and version 1.3 or later is part of all distributions of LaTeX
% version 2005-12-01 or later.
%
% This work has the LPPL maintenance status ‘maintained.’
%
% The Current Maintainer of this work is Geoff Riley.
%
%% This package may be freely used, especially by, but not limited to, stude
%% lecturers and staff of the Open University. It was created by the
%% efforts of many who are now or have been connected with the Open Universi
%% Students Association. No acknowledgement is _required_ for using this pac
%% within the production of a _Tutor Marked Assessment._
```

Adapted by Peter McFarlane from various sources. All errors of style or content are mine or subsequent contributors. Acknowledgements to Bob Margolis and Rob Lynas (from whom some macros are plagiarised). Further contributions from Steve Mayer and Tim Dale. Annotations, in part, and further modification by Geoff Riley.

Package Options

- `[alph]` (default) question numbering as 1(b)(iii)
- `[roman]` varies question numbering to sequence used by M381 i.e. 1(ii)(c)
- `[cleveref]` question numbering creates automatic referencing for use with cleveref package
- `[pdfbookmark]` add PDF bookmarks for each question using hyperref package
- `[legacy]` enables old definitions of `\vec` and `\C` for backward compatibility

To use a package option, place the option(s) before the package name: `\usepackage[roman,cleveref]{tma}`

```
\RequirePackage{expl3} % LaTeX3 "experimental"
```

4.1 Package Initialisation

```
% ============================
%% Package Initialization
```

```
% %%%%%%%%%%%%%%%%%%%%%%%%%
\ExplSyntaxOn
\tl_new:N \g_tma_constant_name
\tl_new:N \g_tma_constant_tma
\tl_new:N \g_tma_constant_course
\tl_new:N \g_tma_constant_pin
\tl_new:N \g_tma_constant_thedate

\tl_gset:Nn \g_tma_constant_name {name}
\tl_gset:Nn \g_tma_constant_tma {tma}
\tl_gset:Nn \g_tma_constant_course {course}
\tl_gset:Nn \g_tma_constant_pin {pin}
\tl_gset:Nn \g_tma_constant_thedate {the~date}

\newcommand{\name}{\g_tma_constant_name}
\newcommand{\tma}{\g_tma_constant_tma}
\newcommand{\course}{\g_tma_constant_course}
\newcommand{\pin}{\g_tma_constant_pin}
\newcommand{\thedate}{\g_tma_constant_thedate}

\NewDocumentCommand{\myname}{m}{%
 \tl_gset:Nn \g_tma_constant_name{#1}}
\NewDocumentCommand{\mytma}{m}{%
 \tl_gset:Nn \g_tma_constant_tma{#1}}
\NewDocumentCommand{\mycourse}{m}{%
 \tl_gset:Nn \g_tma_constant_course{#1}}
\NewDocumentCommand{\mypin}{m}{%
 \tl_gset:Nn \g_tma_constant_pin{#1}}
\NewDocumentCommand{\setdate}{m}{%
 \date{#1}\tl_gset:Nn \g_tma_constant_thedate{#1}}
\ExplSyntaxOff

\title{\textbf{TMA: \course-\tma}}
\author{\textbf{\name\space\pin}}


\NewDocumentCommand{\tma@questionstring}{}{\relax}
\NewDocumentCommand{\setquestionstring}{m}{%
 \RenewDocumentCommand{\tma@questionstring}{}{#1}}
\setdate{\today}

```

4.2 Package Loading

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Package Loading
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\RequirePackage{amsmath}
\RequirePackage{amssymb}
\RequirePackage{amsthm}
\RequirePackage{wasysym}
\RequirePackage{bm}
\RequirePackage{upgreek}
\RequirePackage{graphicx}
\RequirePackage{lastpage}
```

```
\RequirePackage{xifthen}
\RequirePackage{verbatim}
\RequirePackage{fancyhdr}
\RequirePackage{geometry}
\RequirePackage{calc}
\RequirePackage[UKenglish]{isodate} % use UK format for date
\cleanlookdateon % remove th,st, rd from date

```

4.3 Geometry Settings

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Geometry Settings
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\geometry{
 headheight=10mm,
 headsep=5mm,
 bottom=25mm,
 footskip=15mm,
 left=30mm,
 right=30mm,
 marginparwidth=0mm,
 marginparsep=0mm,
 includemp
}

```

4.4 Margin Notes

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Margin Notes
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\NewDocumentCommand{\marginnote}{m}{\marginpar{#1}}
\NewDocumentCommand{\marginnotes}{}{
 \geometry{
  marginparwidth=40mm,
  marginparsep=5mm,
  left=20mm,
  right=15mm
 }
}

```

4.5 Question Numbering

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Question Numbering
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcounter{question}
\newcounter{qpart}[question]
\newcounter{qsubpart}[qpart]
\renewcommand{\thequestion}{\arabic{question}}
```

4.6 Option Handling

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Option Handling
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Define boolean flags
\newif\iftma@roman
\newif\iftma@usecleveref
\newif\iftma@usepdfbookmark
\newif\iftma@legacy

% Set default options
\tma@romanfalse          % Default numbering is 'alph'
\tma@usecleverefffalse   % Default is not to use cleveref
\tma@usepdfbookmarkfalse % Default is not to use pdfbookmark
\tma@legacyfalse         % Default is not to use legacy definitions

% Define commands with default values
\renewcommand{\theqpart}{\alph{qpart}}
\renewcommand{\theqsubpart}{\roman{qsubpart}}
\NewDocumentCommand{\tma@crefname}{mmm}{\relax}
\NewDocumentCommand{\tma@stepcounter}{m}{\stepcounter{#1}}
\NewDocumentCommand{\tma@bookmark}{O{0}mm}{\relax}
\NewDocumentCommand{\tma@pageref}{m}{\pageref{#1}}

% Declare options
\DeclareOption{roman}{%
 \tma@romantrue%
}

\DeclareOption{alph}{%
 \tma@romanfalse%
}

\DeclareOption{cleveref}{%
 \tma@usecleverefftrue%
}

\DeclareOption{pdfbookmark}{%
 \tma@usepdfbookmarktrue%
}

\DeclareOption{legacy}{%
 \tma@legacytrue%
}

\DeclareOption*{%
 \PackageWarning{tma}{Unknown option `\CurrentOption'}%
}

% Process options
\ProcessOptions\relax

```

4.7 Debugging Options

```
\typeout{*************** OPTION RESULTS **********}
\iftma@usepdfbookmark
\typeout{pdfbookmark is TRUE}
\else
\typeout{pdfbookmark is FALSE}
\fi
\iftma@roman
\typeout{roman is TRUE}
\else
\typeout{roman is FALSE}
\fi
\iftma@usecleveref
\typeout{cleveref is TRUE}
\else
\typeout{cleveref is FALSE}
\fi
\iftma@legacy
\typeout{legacy is TRUE}
\else
\typeout{legacy is FALSE}
\fi
\typeout{************* END OPTION RESULTS **********}


```

4.8 Package adjustments based on Options

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Set Up Package Based on Options
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% Set question numbering
\iftma@roman
\renewcommand{\theqpart}{\roman{qpart}}
\renewcommand{\theqsubpart}{\alph{qsubpart}}
\else
\renewcommand{\theqpart}{\alph{qpart}}
\renewcommand{\theqsubpart}{\roman{qsubpart}}
\fi
% Load hyperref if necessary
\iftma@usepdfbookmark
\AtBeginDocument{%
 \hypersetup{%
  colorlinks=true,%
  linkcolor=blue,%
  urlcolor=blue,%
  pdfstartview=FitH,%
  pdftitle={TMA~\tma}, %
  pdfauthor={\name~-~\pin}, %
  pdfkeywords={OUCU:~\pin, TMA~\tma}, %
  pdfsubject=\course%
 }%
}
\RequirePackage[pdfencoding=unicode,psdextra]{hyperref}
```

```
\fi

% Load cleveref if necessary
\iftma@usecleveref
% Ensure hyperref is loaded before cleveref
\@ifpackageloaded{hyperref}%
{}%
{\RequirePackage[pdfencoding=unicode,psdextra]{hyperref}}
\RequirePackage{cleveref}
% Redefine commands for cleveref
\RenewDocumentCommand{\tma@crefname}{mmm}{\crefname{#1}{#2}{#3}}
\RenewDocumentCommand{\tma@stepcounter}{m}{\refstepcounter{#1}}
\fi

% Redefine commands for pdfbookmark
\iftma@usepdfbookmark
\RenewDocumentCommand{\tma@pageref}{m}{\pageref*{#1}}
\RenewDocumentCommand{\tma@bookmark}{O{0} +m +m}{%
 \pdfbookmark[#1]{#2}{#3}%
}
\fi

\setquestionstring{Q}

```

4.9 Question Environment

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Question Environment
% %%%%%%%%%%%%%%%%%%%%%%%%%%%

% Set up cref names if cleveref is used
\iftma@usecleveref
\tma@crefname{question}{question}{questions}
\tma@crefname{qpart}{part}{parts}
\tma@crefname{qsubpart}{section}{sections}
\fi

\NewDocumentEnvironment{question}{O{0}}{%
 \ifthenelse{#1>0}{\setcounter{question}{#1-1}}{\relax}%
 \tma@stepcounter{question}%
 \tma@bookmark{Question \thequestion}%
  {question\thequestion}%
 \makebox[0em][r]{\large{\tma@questionstring~\thequestion\hspace{0.3em}}}\pa
}{%
 \par \vspace{3em}%
}

\NewDocumentCommand{\qpart}{O{0}}{%
 \ifthenelse{#1>0}{\setcounter{qpart}{#1-1}}{\relax}%
 \tma@stepcounter{qpart}%
 \tma@bookmark[1]{\thequestion.\theqpart}%
  {qpart.\thequestion.\theqpart}%
 \par%
 \makebox[0pt][r]{\large{(\theqpart)\hspace{1.5em} }}%
}
```

```
279
280 \NewDocumentCommand{\qsubpart}{O{0}}{%
281  \ifthenelse{#1>0}{\setcounter{qsubpart}{#1-1}}{\relax}%
282  \tma@stepcounter{qsubpart}%
283  \tma@bookmark[2]{\thequestion.\theqpart.\theqsubpart}%
284   {qsubpart.\thequestion.\theqpart.\theqsubpart}%
285  \ifthenelse{\value{qsubpart}>1}%
286  {\par}{}%
287  \hspace{-2em}\makebox[2em][l]{\large{(\theqsubpart)}}%
288 }
289
```

4.10 Mathematical commands

```
290 % %%%%%%%%%%%%%%%%%%%%%%%%%%%
291 %% Mathematical Commands
292 % %%%%%%%%%%%%%%%%%%%%%%%%%%%
293
294 %% Differential Operators
295 \NewDocumentCommand{\dd}{}{\ensuremath{\mathop{}\!\mathrm{d}}}
296 \NewDocumentCommand{\e}{}{\ensuremath{\mathrm{e}}}
297 \NewDocumentCommand{\ii}{}{\ensuremath{\mathrm{i}}}
298
299 %% Number Sets
300 \NewDocumentCommand{\N}{}{\ensuremath{\mathbb{N}}}
301 \NewDocumentCommand{\Z}{}{\ensuremath{\mathbb{Z}}}
302 \NewDocumentCommand{\Q}{}{\ensuremath{\mathbb{Q}}}
303 \NewDocumentCommand{\R}{}{\ensuremath{\mathbb{R}}}
304 \NewDocumentCommand{\Complex}{}{%
305  \ensuremath{\mathbb{C}}} % Changed from \C to \Complex
306 \NewDocumentCommand{\Rr}{}{\ensuremath{\mathcal{R}}}
307
308 %% Vector Notation
309 \NewDocumentCommand{\vect}{m}{%
310  \ensuremath{\overrightarrow{#1}}} % Changed from \vec to \vect
311 \NewDocumentCommand{\ve}{m}{\ensuremath{\textbf{#1}}}
312
313 %% Ordinal Indicators
314 \NewDocumentCommand{\st}{}{\textsuperscript{st}}
315 \NewDocumentCommand{\nd}{}{\textsuperscript{nd}}
316 \NewDocumentCommand{\rd}{}{\textsuperscript{rd}}
317 \NewDocumentCommand{\nth}{}{\textsuperscript{th}}
318
319 %% Additional Symbols
320 \NewDocumentCommand{\rect}{}{\ensuremath{\sqsubset\!\!\sqsupset}}
321
322 %% Combinatorial Notations
323 \NewDocumentCommand{\comb}{mm}{\ensuremath{{}^{#1}C_{#2}}}
324 \NewDocumentCommand{\perm}{mm}{\ensuremath{{}^{#1}P_{#2}}}
325
326 %% Mathematical Operators
327 \DeclareMathOperator{\re}{Re}
328 \DeclareMathOperator{\im}{Im}
329 \DeclareMathOperator{\Log}{Log}
330 \DeclareMathOperator{\Arg}{Arg}
331 \DeclareMathOperator{\Wnd}{Wnd}
```

```
\DeclareMathOperator{\Res}{Res}
\DeclareMathOperator{\Ker}{Ker}
\DeclareMathOperator{\Orb}{Orb}
\DeclareMathOperator{\Stab}{Stab}
\DeclareMathOperator{\Fix}{Fix}

%% Derivatives
\NewDocumentCommand{\deriv}{mm}{%
 \frac{\dd{}#1}{\dd{}#2}}
\NewDocumentCommand{\pderiv}{mm}{%
 \frac{\partial #1}{\partial #2}}
\NewDocumentCommand{\psderiv}{mmm}{%
 \frac{\partial^2 #1}{\partial #2 \partial #3}}

% Legacy Definitions
\iftma@legacy
% Redefine \vec to old definition
\RenewDocumentCommand{\vec}{m}{\ensuremath{\overrightarrow{#1}}}
% Redefine \C to old definition
\ProvideDocumentCommand{\C}{}{\ensuremath{\mathbb{C}}}
\RenewDocumentCommand{\C}{}{\ensuremath{\mathbb{C}}}
\fi

```

4.11 Theorem Environment

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Theorem Environment
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newtheorem{lemma}{Lemma}
\newtheorem{theorem}{Theorem}
% Define \blacksmiley without loading wasysym
\ProvideDocumentCommand{\blacksmiley}{}{%
 \ensuremath{\unicode{263B}}} % Unicode for blacksmiley emoji
\RenewDocumentCommand{\qedsymbol}{}{\blacksmiley}

```

4.12 Miscellaneous Settings

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Miscellaneous Settings
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%

\RenewDocumentCommand{\thefootnote}{}{\fnsymbol{footnote}}
\numberwithin{equation}{question}
\setlength{\parindent}{0pt}
\setlength{\parskip}{2ex plus 0.3ex minus 0.2ex}

```

4.13 Header and Footer Settings

```
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% Header and Footer Settings
% %%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

```
\pagestyle{fancy}
\fancyhf{} % Clear all headers and footers
\fancyhead[L]{\textrm{\name\ \pin}}
\fancyhead[C]{\textrm{\course\ TMA-\tma}}
\fancyhead[R]{\textrm{Page \thepage\ of \tma@pageref{LastPage}}}
\RenewDocumentCommand{\headrulewidth}{}{0pt} % Remove header rule

% ############################
%% End of Package
% ############################

\endinput
```

Change History

Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.