TEMPLATE TITLE

Subtitle

Author
Who?
Where?
When?

Contents

1 Theorem

Definition 1.1 (Definition 1)**.** *Your definition here...*

Definition 1.2 (Definition 2)**.** *Your definition here...*

Definitions are numbered independently from other environments.

Theorem 1.1 (A Theorem)**.** *Your theorem here...*

Lemma 1.2 (A Lemma)**.** *Your lemma here...*

Corollary 1.3 (A Corollary)**.** *Your corollary here...*

Proposition 1.4 (A Proposition)**.** *Your proposition here...*

Remark 1.1 (A Remark)**.** Your remark here...

Remarks also have their own numbering.

$$\sin(\alpha+\beta)=\sin\alpha\cos\beta+\cos\alpha\sin\beta. \tag{1.1}$$

Equation numbers follow the section number.

2 Exercise, Question and Example

The question, exercise, and example environment are displayed in a blue box:

Question 2.1 (☆☆☆ — A question)**.** Your question here...

Example 2.1 (★☆☆ — An example)**.** Your example.....

Experiment:

Takeaway:

Intuition:

Exercise 2.1 (✂★★★ — An Exercise)**.** Your exercise.....

3 Box

Four Markdown-style boxes can be used directly:

This is a red box.

This is a green box.

This is a gray box.

This is a blue box.

But you'd better not use them directly to avoid confusion since other environments have used these boxes, try to define your own box (see below).

If you dont like the colors, you can define your own:

```
\definecolor{mypink}{rgb}{1,0.965,0.965}
\definecolor{blue2}{RGB}{0,47,167}
```

Then update the color in the following code:

```
\newtcolorbox{bluebox}{
  colback=myblue!3,       % Background color of the box
  colframe=myblue,     % Border color of the box
  leftrule=4pt,              % Thickness of the left border
  toprule=0pt,               % No top border
  bottomrule=0pt,            % No bottom border
  rightrule=0pt,             % No right border
  arc=1.2mm,                   % Rounded corners
  outer arc=1.5mm,             % Outer border radius
}
```

The same applies to other boxes, and you can define your own in the same way.

4 Figures and Tables

Avoid using floating environments (figures and tables) inside the boxes. To include them, use this structure:

```
    \begin{center}
        \includegraphics[width=0.8\textwidth]{image.jpeg}
        \captionof{figure}{A figure}
    \end{center}
```

```
    \begin{center}
        \begin{tabular}{ccc}
            \hline
            a & b & c \\
            \hline
            a & b & c \\
            \hline
        \end{tabular}
        \captionof{table}{A table}
    \end{center}
```

Figure 1: A figure

a	b	c
a	b	c

Table 1: A table

5 Code

We defined a code environment for the R language:

```
> a+1
# [1] 2
```

If you use another language, modify the following code:

```
\lstnewenvironment{R}{\lstset{
    language=R,
    basicstyle=\footnotesize\ttfamily,
    numbers=left,
    numberstyle=\tiny\color{black},
    stepnumber=1,
    numbersep=5pt,
    backgroundcolor=\color{mygray},
    showspaces=false,
    showstringspaces=false,
    showtabs=false,
    frame=single,
    rulecolor=\color{black},
    tabsize=4,
    captionpos=b,
    breaklines=true,
    breakatwhitespace=false,
    keywordstyle=\ttfamily\bfseries\color{myblue},
    commentstyle=\ttfamily\bfseries\color{myred},
    stringstyle=\ttfamily\bfseries\color{mygreen}
}}{}
```

The `tex` environment was defined just for writing this tutorial. You can remove it if it's unnecessary.

6 Macros

This template includes the macros shown in Tables 2 and 3.

Macro	Symbol	Macro	Symbol
\C	$\mathbb{C}$	\ninfo{a}	$(-\infty, a)$
\Q	$\mathbb{Q}$	\ninfc{a}	$(-\infty, a]$
\Z	$\mathbb{Z}$	\pinfo{a}	$(a, +\infty)$
\Rn{k}	$\mathbb{R}^k$	\pinfc{a}	$[a, +\infty)$
\borel	$\mathscr{B}$	\pa{a,b,c}	(a, b, c)
\familay	$\mathscr{F}$	\br{a,b,c}	$[a, b, c]$
\oc{a,b}	$(a, b]$	\cbr{a,b,c}	$\{a, b, c\}$
\co{a,b}	$[a, b)$	\inner{a,b}	$\langle a, b \rangle$
\norm{a}	$\|a\|$	\abs{a}	$\lvert a \rvert$
\floor{a}	$\lfloor a \rfloor$	\ceil{a}	$\lceil a \rceil$
\dd	d	\dv{f}{x}{2}	$\frac{\mathrm{d}^2 f}{\mathrm{d}x^2}$
\p	∂	\pdv{f}{x}{2}	$\frac{\partial^2 f}{\partial x^2}$
\pr	P	\Cov	Cov
\E	E	\Corr	Corr
\I{x>1}	$\mathbf{1}_{\{x>1\}}$	\inD	$\xrightarrow{\mathrm{d}}$
\inAS	$\xrightarrow{\text{a.s.}}$	\inP	$\xrightarrow{\mathrm{pr}}$
\inLp	$\xrightarrow{\mathscr{L}^p}$	\inMSE	$\xrightarrow{\mathrm{qm}}$
\simIND	$\overset{\perp\!\!\!\perp}{\sim}$	\indep	$\perp\!\!\!\perp$
\IID	IID	\simIID	$\overset{\mathrm{IID}}{\sim}$
\mat{a&b\\c&d}	$\begin{matrix} a & b \\ c & d \end{matrix}$	\smat{a&b\\c&d}	$\left(\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right)$
\bmat{a&b\\c&d}	$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$	\bsmat{a&b\\c&d}	$\left[\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right]$
\pmat{a&b\\c&d}	$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$	\psmat{a&b\\c&d}	$\left(\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}\right)$
\argmin	$\arg\min$	\argmax	$\arg\max$

Table 2: Macros and Corresponding Symbols for Math Operator

Macro	Symbol	Macro	Symbol
\median	median	\Var	Var
\SD	SD	\CV	CV
\Bias	Bias	\AMSE	AMSE
\MSE	MSE	\ARE	ARE
\AV	AV	\CRLB	CRLB
\TN	TN	\Bern	Bern
\Unif	Unif	\Normal	N
\logNormal	LN	\Bin	Bin
\NB	NB	\HG	HG
\Geom	Geom	\Beta	Beta
\BetaBin	Beta-Bin	\Ga	Ga
\Exp	Exp	\Expo	Expo
\Po	Po	\Multi	Multi
\student	t	\Cauchy	Cauchy
\Pareto	Pareto	\RV	RV
\Laplace	Laplace	\cdf	CDF
\Logistic	Logistic	\cgf	CGF
\Dir	Dir	\pdf	PDF
\DP	DP	\pmf	PMF
\Inv	Inv-	\chf	CHF
\F	F	\mgf	MGF
\EF	EF	\MLE	MLE
\NEF	NEF	\MAP	MAP
\Med	MED	\MME	MME
\EB	EB	\QME	QME
\UMVUE	UMVUE	\MPT	MPT
\UMPT	UMPT	\LRT	LRT
\mis	MIS	\obs	OBS
\com	COM	\MCMC	MCMC
\burn	burn	\thin	thin
\ESS	ESS		

Table 3: Macros and Corresponding Symbols for Statistical Notation