Title

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1 Question and Solution

The question environment is displayed in a blue box, and we have also defined a solution environment:

Question 1 (✂★★☆ — A question)**.** Your question here...

SOLUTION:

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

$$\sin(\alpha+\beta)=\sin\alpha\cos\beta+\cos\alpha\sin\beta. \tag{1}$$

2 Theorem

You can also use the following environment to help complete your homework:

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

Lemma 1 (A Lemma)**.** *Your lemma here...*

Remark 1 (A Remark)**.** Your remark here... **Experiment**: **Takeaway**: **Intuition**:

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.

*Email: author@example.com

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 have defined a code environment for R:

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

If you're using a different 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}
}}{}
```

I've also defined a `tex` environment for this tutorial. You can remove it if you don't need it.

6 Macro

This template includes macros shown in Table 2 and Table 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	$(a, b]$	\cbr{a,b,c}	$\{a, b, c\}$
\co	$[a, b)$	\inner{a,b}	$\langle a, b \rangle$
\norm{a}	$\|a\|$	\abs{a}	$\|a\|$
\floor	$\lfloor a \rfloor$	\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