Introduction to LaTeX
for "Word users"

Heath James and Guy Kloss
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LaTeX can save about two months formatting time off the average 3–4 year PhD writing cycle.
(Source: Peter Flynn, http://www.silmaril.ie/cgi-bin/blog/)

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Introduction

- What is LaTeX?
- LaTeX vs. Word
- Producing a Simple Document
- LaTeX Installation under Windows
- How to deal with problems?

What is LaTeX?

Introduction to LaTeX for "Word users"

TeX and LaTeX?

- **TeX** is a computer program created by Donald E. Knuth. It is aimed at typesetting text and mathematical formulas.

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TeX and LaTeX?

- **TeX** is a computer program created by Donald E. Knuth. It is aimed at typesetting text and mathematical formulas.

- **LaTeX** is a macro package which enables authors to typeset and print their work at the highest typographical quality, using a predesigned, professional layout. LaTeX was originally written by Leslie Lamport. It uses the TeX formatter as its typesetting engine.

Why use LaTeX?

- Portability (Unix, Linux, Windows, MacOS, Amiga OS, DOS, ...)
- Flexibility (lots of packages)
- Precise Control
- Quality of Output (e. g. math formulas)
- Can be used to write documents in any language

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Support for any Language

การใช้ภาษาไทยกับ LaTeX

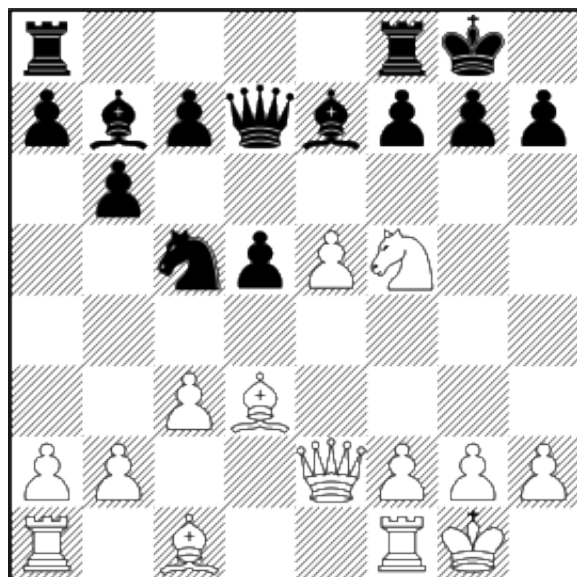如何使用 LaTeX 生成中文 PDF 文件
— How to Generate Chinese PDF Files with LaTeX

Ελληνικά στο LaTeX.
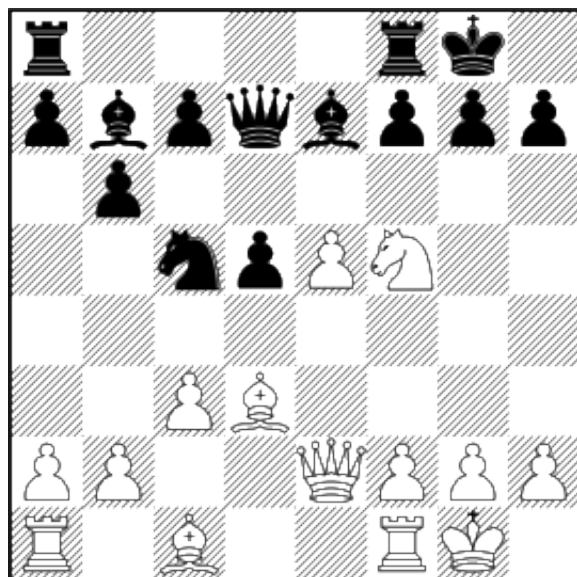
Introduction to LaTeX for "Word users"
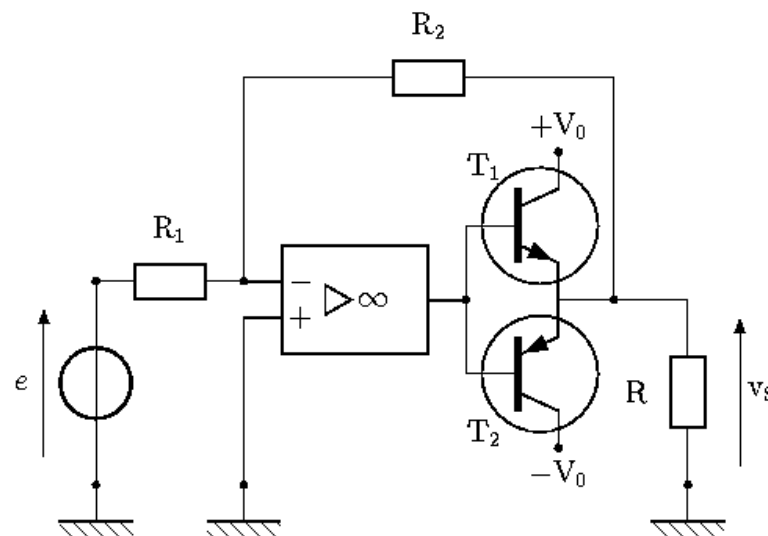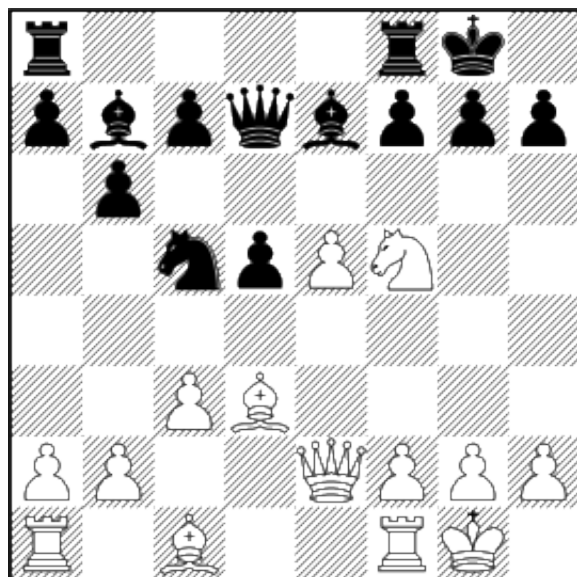
10. ... ♘c5×d3?
11. ♕e2–g4! Weiss gewinnt.
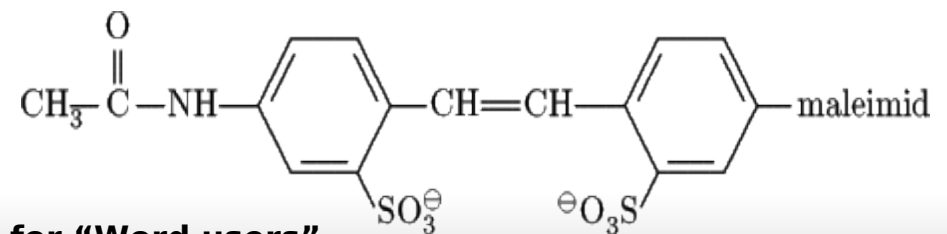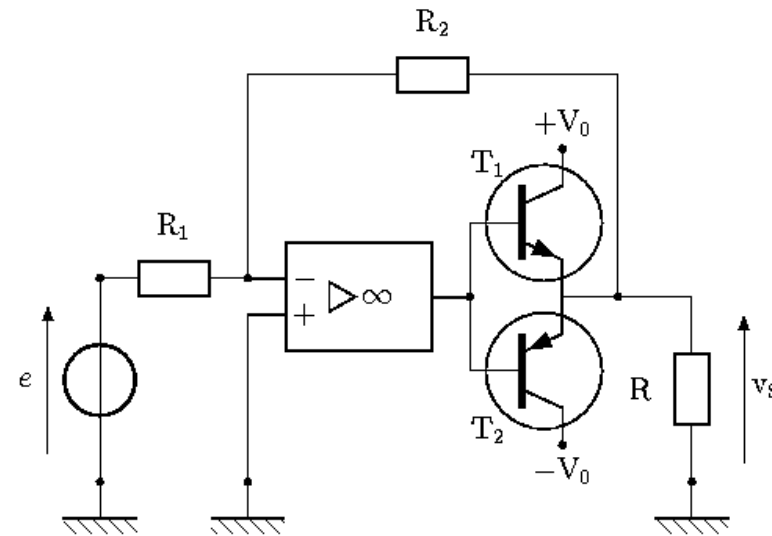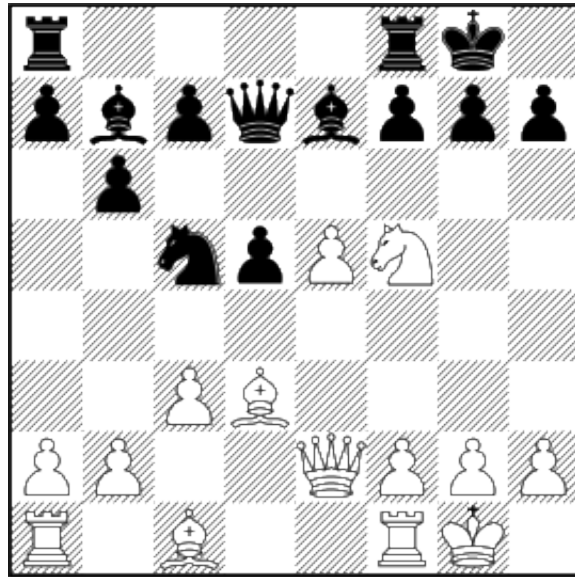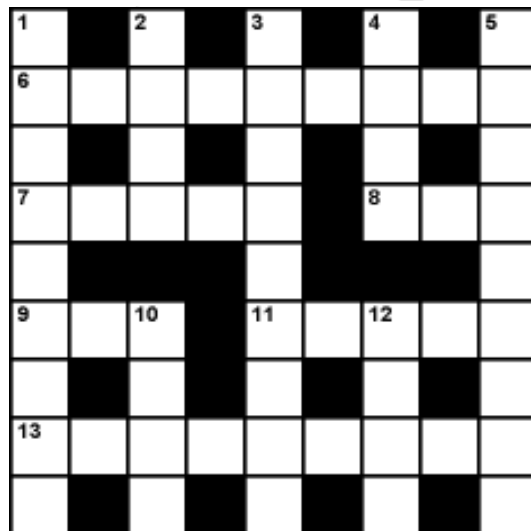
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Other Examples

10.   ...   ♞c5×d3?
11.   ♛e2–g4! Weiss gewinnt.

Other Examples

10. ... ♘c5×d3?
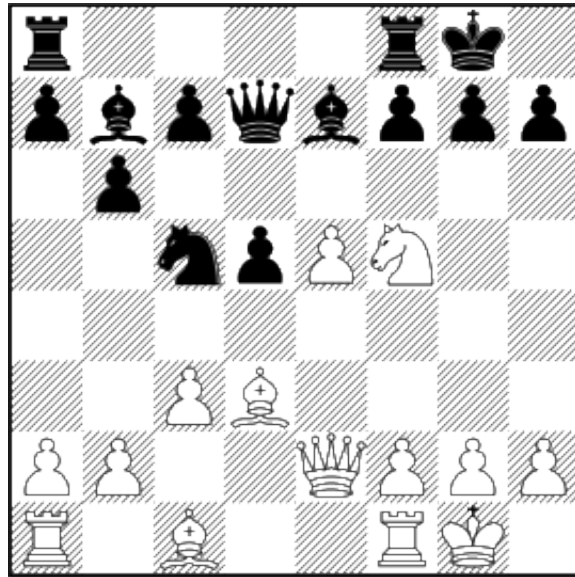11. ♕e2–g4! Weiss gewinnt.

Other Examples

Other Examples

LaTeX vs. Word

LaTeX vs. Word

- Suitable for large projects
  - clear, explicit separation: content ⇔ style
  - ease with which a table of contents, bibliography and index can be generated
  - ability to split books, etc. into smaller (more manageable) pieces that are easily combined once writing is complete

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LaTeX vs. Word

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  - ability to split books, etc. into smaller (more manageable) pieces that are easily combined once writing is complete
- Stability and interchangeability of documents (as opposed to Word 6 vs. Office 95 vs. Office 97 vs. Office 2000 vs. Office XP vs. ...)
- No pressure to **upgrade NOW OR ELSE!**
- No Word viruses

Quality

TeX

monetary awards

- version: 3

Word

Microsoft Error Reporting

- version: Word 2

Quality

TeX
monetary awards

- version: 3.1

Word
Microsoft Error Reporting

- version: Word 6

Quality

TeX

monetary awards

- version: 3.141

Word

Microsoft Error Reporting

- version: Office 2000

Quality

TeX
monetary awards

- version: 3.141592

Word
Microsoft Error Reporting

- version: Office XP

Math Equations

- ## Word:

$$\iiint_{G} \left[u\nabla^2 v + (\nabla u, \nabla v) \right] d^3 V = \oiint_{S} \left(u\frac{\partial v}{\partial n} + v\frac{\partial u}{\partial n} \right) d^2 A$$

- ## LaTeX:

$$\iiint_{\mathcal{G}} \left[u\nabla^2 v - v\nabla^2 u \right] d^3 V = \oiint_{S} \left(u\frac{\partial v}{\partial n} - v\frac{\partial u}{\partial n} \right) d^2 A$$

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Producing a Simple Document

Producing LaTeX Documents

- For now, we will start with a simple, empty (text) document.

- Usually you start out by filling stuff into a skeleton document.

- Then you learn as you go.

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- LaTeX is more WYMIWYG
  (What You Mean is What You Get)
  than WYSIWYG.

Producing LaTeX Documents

- For now, we will start with a simple, empty (text) document.

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- LaTeX is more WYMIWYG
  (What You Mean is What You Get)
  than WYSIWYG.

- The time invested initially will be very well gotten back at later times.
  - Less annoyances in formatting ...

Simple Document

```
\documentclass [a4paper,12pt]{article}

\usepackage {...}
% --------------------------------------------------
\begin{document}
% --------------------------------------------------

  •

  •

  •

% --------------------------------------------------
\end{document}
```

Introduction to LaTeX for "Word users"

```
\documentclass [a4paper,12pt]{article}

\usepackage {...}
% ----------------------------------------------------------------
\begin{document}
% ----------------------------------------------------------------

  •

  •

  •

% ----------------------------------------------------------------
\end{document}
```

preamble

Simple Document

```latex
\documentclass [a4paper,12pt]{article}

\usepackage {...}
% ---------------------------------
\begin{document}
% ---------------------------------
  .

  .

  .

% ---------------------------------
\end{document}
```

preamble

body

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Hello World

```latex
\documentclass {article}

\begin{document}
Hello World!
\end{document}
```

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Author Info

```latex
\title{A Sample Document}
\author{Heath A. James \and Guy Kloss}
\date{...}

.
.
.

\maketitle
```

Author Info

```
\title{A Sample Document}
\author{Heath A. James \and Guy Kloss}
\date{...}
```

preamble

*
*
*

```
\maketitle
```

Author Info

```
\title{A Sample Document}
\author{Heath A. James \and Guy Kloss}
\date{...}
```

preamble
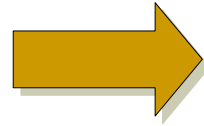
-
-
-

```
\maketitle
```

body

Document Structure

```
\part{...}
\chapter{...}
\section{...}
\subsection{...}
\subsubsection{...}
\paragraph{...}
\subparagraph{...}
```

Necessary Steps
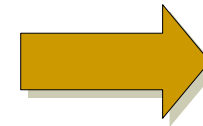# to produce a document

TeX
input file

short cut:
pdflatex

TeX/LaTeX
program

DVI file

device
driver

Output
(Paper,
PDF, PS)

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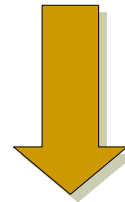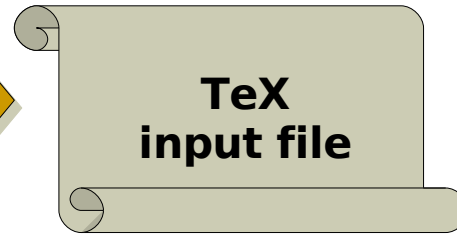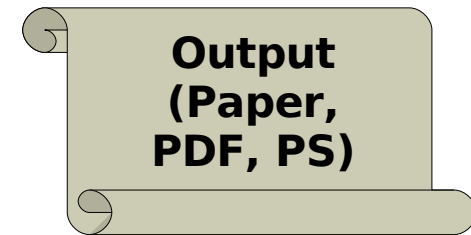
LaTeX File Types

- **.tex** LaTeX or TeX input file. Can be compiled with **latex**.

- **.sty** LaTeX macro package. This is a file you can load into your LaTeX document using the "**\usepackage**" command.

- **.cls** Class files define what your document looks like. They are selected with the "**\documentclass**" command.

- **.dtx** Documented TeX. This is the main distribution format for LaTeX style files.

- **.ins** Is the installer for the files contained in the matching **.dtx** file.

LaTeX Installation under Windows

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How to set up LaTeX for Windows (1)

- **Step One – MiKTeX**
  `http://www.miktex.org/`

- **Step Two – Ghostscript and GSview**
  `http://www.cs.wisc.edu/~ghost/`

- **Step Three – Acrobat Reader**
  `http://www.adobe.com/products/acrobat/readstep2.html`

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How to set up LaTeX for Windows (2)

- **Step Four – Windows Editor:**
  - **TeXnicCenter** (open source)
    http://www.toolscenter.org/
  - **WinEdt** (share ware, Massey site license)
    http://www.winedt.com/
  - **SciTE** (open source)
  - **LaTec plugin for Eclipse** (open source)
  - **emacs, vi, ...** (open source)

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- Viewers
  - DVI
    - xdvi, kdvi, …
  - PDF
    - Acrobat Reader
    - GhostView
    - xpdf, kpdf, …
- Support Tools
  - BibTeX
  - GNUplot
  - xfig, …
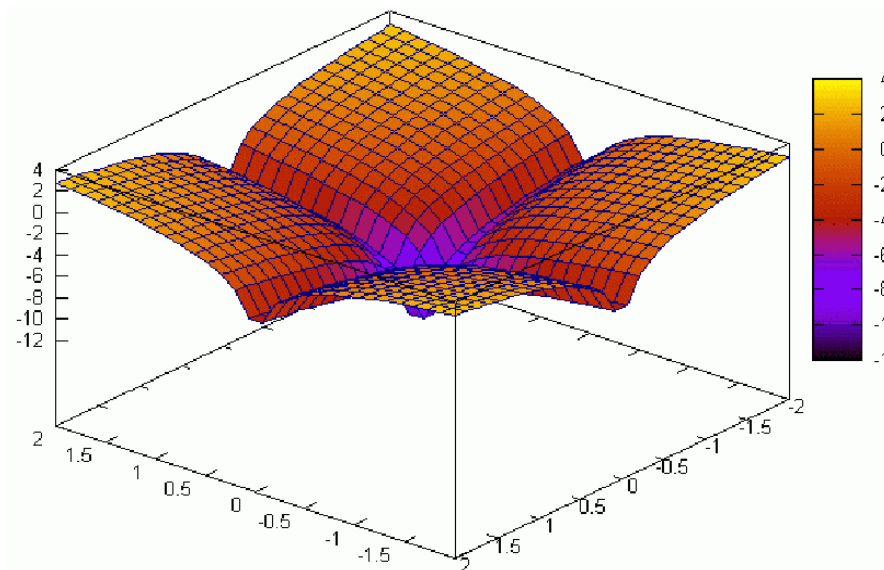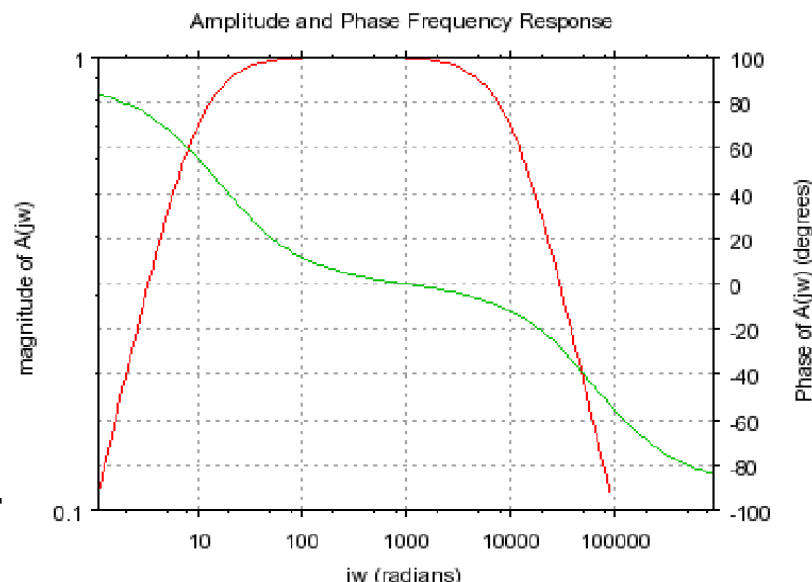
Support Programs (2)

- ## Other Tools

  - ### Reference Manager
    - **JabRef** (open source, Java)
      `http://jabref.sourceforge.net/`

  - ### Mind Manager
    - **FreeMind** (open source, Java)
      `http://freemind.sourceforge.net/`
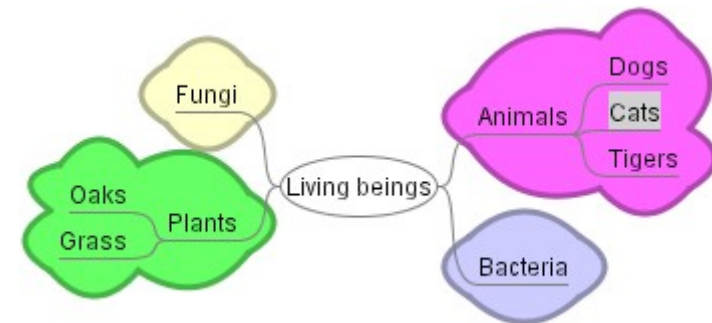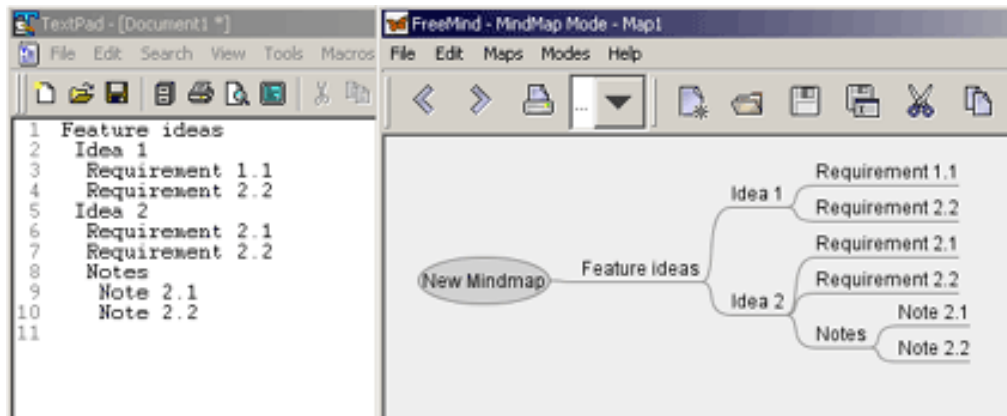
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How to deal with problems?

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Help (1)

- The Not So Short Introduction to LaTeX2e
  http://tobi.oetiker.ch/lshort/lshort.pdf

- LaTeX for Word Processor Users
  http://www.tex.ac.uk/tex-archive/info/latex4wp/latex4wp.pdf

- Comprehensive TeX Archive Network
  http://www.ctan.org/ or http://www.tex.ac.uk/

- LaTeX Navigator
  http://tex.loria.fr/english/

- TeX Catalogue
  http://www.ctan.org/tex-archive/help/Catalogue/

- Wikibook LaTeX
  http://en.wikibooks.org/wiki/LaTeX

Help (2)

- LaTeX Related Information
  http://theoval.cmp.uea.ac.uk/~nlct/latex/
    - For Complete Novices
      http://theoval.cmp.uea.ac.uk/~nlct/latex/novices/novices.html
    - To Write a PhD Thesis
      http://theoval.cmp.uea.ac.uk/~nlct/latex/thesis/thesis.html
- LaTeX2e help 1.4
  http://www.emerson.emory.edu/services/latex/latex2e/latex2e_toc.html
- Beginning LaTeX
  http://www.cs.cornell.edu/Info/Misc/LaTeX-Tutorial/LaTeX-Home.html
- Norm Matloff's LaTeX Tutorial Site
  http://heather.cs.ucdavis.edu/~matloff/latex.html
    - 5-Minute LaTeX Tutorial
      http://heather.cs.ucdavis.edu/~matloff/LaTeX/FiveMinute.html

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Any Questions?

Slides & Further Information:
 https://GuteFee.massey.ac.nz/moin/HOWTO/LaTeX

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