Janaury 24, 2017
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This file is at http://www.rasmusen.org/a/latex-rasmusen.pdf.

These notes are **tips and tricks** that I have found useful or thought might be useful. I wrote these for my own use and have not tried to make them clear for others, but some other people will find them useful.

The source file is: http://www.rasmusen.org/a/latex-rasmusen.tex.

My email address is erasmuse@indiana.edu .

I use BB to indicate Backslash.

DISPLAYSTYLE FOR INTEGRALS AND SUMMATION SIGNS Put BBeverymathBBdisplaystyle in the preamble before begindocument in every single one of my files.

For comments: PERCENTAGE Here is a one line comment

BBiffalse Here is the commented paragraph that won't show up in the output. BBfi

---

CLOSELY SPACED LISTS

Here is a list created using the new environment immediately above her ein the source file, with close spacing between lines:

1. Here is the first item
2. Here is the 2nd item
3. Here is the 3rd item

INDEXING Use \documentclass[12pt, makeidx]{article}

Put the following command in your preamble: \immediate\write18\{makeindex latex-rasmusen.idx}
That command uses write18 to issue a DOS command to process the *.idx file.

Put these at the start, int eh preamble before begin document:

\usepackage{makeidx}
\makeindex

and at the where you want the index to show up, write

\begin{theindex}
\printindex
\end{theindex}

To index a i.e. the word 'Likelihood' write at each page it appears:

I would say that the \index{likelihood} of that is zero.

For index subentries, use an exclamation point and tag as:

"In some respects the Bayesian formulation \index{Bayesian inference!advantage and disadvantage of } is the simpler and in other respects the more difficult."

You have to run this a few times to get all teh auxiliary files working right.

A good reference is: "MakeIndex: An Index Processor For LaTEX" by Leslie Lamport 17 February 1987 http://tex.loria.fr/bibdex/makeindex.pdf

MORE STUFF, I DONT UNDERSTAND NOW:

\indexentrywords!and|hyperpage1 \xindexentryexisting|hyperpage1

to generate something like this:

\begintheindex
\itemextend\hfill3
\itemextension problem\hfill3
\itemextension of a map\hfill3
\itemhomotopic\hfill5
\itemhomotopy\hfill5
\endtheindex

I have an examples of tex input and pdf output, with different and better instructions, at

http://www.rasmusen.org/a/sample-index.tex and http://www.rasmusen.org/a/sample- index.pdf

Here is an example of how to create an italicized index entry. This puts the entry "\it Producers– The" at the location "producers" would have in the index.

The next game, inspired by Mel Brooks's offbeat film \it The Producers \indexproducers@\it Producers– The, illustrates a peculiarity of optimal contracts

My second way to do indexes, the less intelligent way (because it will repeat page numbers if more than one \label is on one page, and it won't alphabetize) is to just put \labeltermtoindex in the text, and \pagereftermtoindex in the index. Check to see if a label is assigned more than once, by mistake. To do that, you can look at the latex processing log in *.log, or you can look at the *.aux file and it will list all the page numbers assigned to a label.

LATEX RELATIVE PATHS AND INPUT AND INCLUDE

If I put \input..\preamble-regulation.tex that tells latex to search the directory ABOVE my current one for the file preamble-regulation.tex and to insert it. You can use \input.\below-directory\preamble-regulation.tex to look in below-directory, the directory BELOW my current one. The similar command \include differs in how it treats nesting and multiple input commands.

\includeonly is a useful command for saying which inputs to pay attention to. For a book, you can put it in the preamble and only include the chapters you want to texify at that moment. \includeonlyfile1, file3

See http://en.wikibooks.org/wiki/LaTeX/General_Guidelines.

MARGINAL NOTES WITH NUMBERS

Here's a way to have a floating margin note, with special numbers for the marginal notes with an "m" before each number so the footnotes are m1, m2, m3, etc.

Here is marginal

Here is my text.[m1]

BACKSLASHES

\newcommand{\bl }{\textbackslash}

WORDRAPPING AROUND FIGURES AND PICTURES

\usepackage{wrapfig}

\begin{wrapfigure}[12]{l}{.6\linewidth} \vspace{-28pt}

\begin{center} {\sc Figure 12.\ref{1913-ohio-hunting-license.jpg}\\A 1913 Ohio Hunting License } \end{center} \refstepcounter{figurecounter} \label{1913-ohio-hunting-license.jpg} \includegraphics[width=\linewidth]{1913-ohio-hunting-license.jpg} \end{wrapfigure} Then we put the text that is supposed to go on the right side of the page. The 12 is optional and says the picture should take up 12 lines of text. Usually leave that out.

SANS SERIF FONT: Use this command to change the entire document from that point forward: \renewcommand \rmdefaultcmss

---

TYPE FONT SIZES

By default, LaTeX uses 10pt Computer Modern Roman as its base font. You can change this base font by using the 11pt or 12pt style option on the documentclass line like this:

\documentclass[11pt]article}

10pt Default 11pt Option 12pt Option \tiny 5pt 6pt 6pt \scriptsize 7pt 8pt 8pt \footnotesize 8pt 9pt 10pt \small 9pt 10pt 11pt \normalsize 10pt 11pt 12pt \large 12pt 12pt 14pt \Large 14pt 14pt 17pt \LARGE 17pt 17pt 20pt \huge 20pt 20pt 25pt \Huge 25pt 25pt 25pt

The \resizebox command (from graphicx package) is convenient if you want to produce, e.g., a title that fills the entire page width: \resizebox\linewidth}!\it shape Foo!

shape Foo!

For big font: \usepackage{fix-cm} \newcommand{\bigfont}{\fontsize{60pt}{70pt}\selectfont} \newcommand{\smallfont}{\fontsize{6pt}{7pt}\selectfont} \beginbigfontHere is my writing in a big font. \endbigfont

Here is my writing in a big font.

Here is my writing in a small 6/7 font.

MARGIN COMMENTS

\newcommand{\margincomment}[1] {\mbox{}\marginpar{\tiny\hspace{0pt} poundsign 1}}

\margincomment{Here is my comment}

m2 Here is my comment}

URLS, WEBLINK DISPLYA:

\usepackage{url} \usepackage{hyperref} \hypersetup{breaklinks=true, colorlinks= true, linkcolor=black, hyperfootnotes= false, urlcolor=blue } \urlstyle{same} \usepackage{breakurl}

{COLOR}

\usepackage{color} \newcommand{\red}[1]{\color{red}{poundsign 1} \color{black} } \newcommand{\green}[1]{\color{green}{poundsign 1} \color{black} }

\newcommand{\myheading}[1] {\noindent \color{blue}{\sc poundsign 1}\color{black}}

\myheading{Here is the Heading}

Here is some red writing.

SPACES

A single backslash \will make sure that there is just a single space after a word. This is useful after a period which does not end a sentence, e.g. in Mr. \Jones, so there is just one space after the period.

For a negative space in math mode, use \!

For a normal-width space use \:, backslash-colon This is very useful for alignmen tin tables.

\hfill and \vfill both put space in up to the limits of the page borders. Thus, Top of page \vfill Bottom of page will fill up an entire page, with blank space in the middle.

\vspace*24pt and \hspace*32pt do the obvious things.

The command is supposed to prevent a linebreak.(tilde)

USING SUBSCRIPTS AND SUPERSCRIPTS TOGETHER

MAKING DIGITS AND LETTER SUBSCRIPTS LOOK OK TOGETHER, CHANGING THE FONT SIZE

This happens if and only if

$$-f_{11} + \sum_{j=2}^{n} \frac{f_{1j}^2}{\lambda^{2j}} \geq 1$$

How to make x_j^i different from x_j^i.

$X_i^{\backslash phantomij}$ and $X_{\backslash phantomji}^j$?

<A HREF=" http://www.cse.iitd.ernet.in/ anup/homepage/UNIX/latex.html ">"Some useful tips and tricks in LaTeX".</A>

FLOATS I have not figured out a good way to deal with floats, to get diagrams where I want them. A couple of promising packages are:

\usepackagefloat \usepackageafterpage

\beginfigure[h!] This is supposed to make the figure go right at this point in the paper. \endfigure

This command is supposed to clear out the floats after teh current page is done filling up: \afterpage\clearpage .

ENDNOTES

\usepackageendnotes \let\footnote=\endnote

This will make every use of the Footnote command and endnote.

At the end of the document, put \theendnotes to have them print out.

In Latex, how do I set up a link to http://rasmusen.org/religion.htm that show up in the text as LINK-MINE?

Put \usepackagehyperref in your header, and when you want to link to a page, use the command \hrefhttp://rasmusen.org/religion.htmLINK-MINE.

It works like this.

PUTTING A CIRCLE AROUND SOME TEXT:

\usepackagetikz

\newcommand*\mycircle[1] \begintikzpicture[baseline=(C.base)] \node[draw,circle,inner sep=1pt](C) #1; \endtikzpicture

\mycircleNight

Night, N ig ht, Night

LANDSCAPE VIEW

Changing the whole document to landscape can be done be using the geometry-package:

\usepackage[landscape]geometry

Next I will show you how to change the page layout of single pages. The lscape-package provides according possiblities:

xxusepackagelscape

With

\beginlandscape

dfgdfsfg

\endlandscape

http://texblog.wordpress.com/2007/11/10/landscape-in-latex/

LOOKING AT THE PDF OUTPUT WHILE EDITING If you produce a pdf file and it is open with Adobe Reader, you can't run your tex file through again– it stops. Instead, use EVINCE, another pdf reader, at least while you are editing the file.

CENTERING VERTICALLY ON A PAGE

Here is the stuff to center with the same vertical distance above and below. The commands you can't see are

\newpage

\vspace*\fill

text here

\vspace*\fill

\newpage

DOUBLE SPACING

The following command changes to 1.2 spacing:

\renewcommand\baselinestretch1.2

\usepackagesetspace followed by \doublespace does double spacing, without using doublespacing in footnotes and table captions and suchlike. \beginsinglespace and \endsinglespace then are used to have singlespacing of some packages.

I also use setspace in making a new command for indented singlespaced quotations:

> Here is the quotation.
> I'll put linebreaks in to make it
> three lines long.

\newenvironmentbigquote \beginquotation \beginsmall \beginsinglespace \endsinglespace \endsmall \endquotation

\beginbigquote Here is the quotation. \\I'll put linebreaks in to make it \\three lines long. \endbigquote

END OF PROOF

Here is the rpoof, and it ends. □

\qed is the input symbol.

This needs the package \usepackageamsthm, Theorem environments

SYMBOLS FOR WRITING LEGAL BRIEFS

¶9 §42 56

```
\P 9  \S 42   \dotfill  56
```

INDICATOR SIGNS

Use I_{gi} as a variable which equals 1 if agent i picks an action that costs him g and 0 otherwise.

FOR LOOKING UP LATEX SYMBOLS:

This is great! http://detexify.kirelabs.organd http://detexifyblog.kirelabs.org/past/2009/7/19/detexify_explained

\mbox and \fbox make boxes without and with borders, to keep text together. There can't be a line break in the middle of that kind of box. For a box that spans multiple lines, use

\usepackageboxedminipage \fboxsep=12pt needs to be set for around big blocks of text, with boxedminipage, but if you are just using fbox for one word or symbol, change it to \xfboxsep=.2pt

Text that I want to box, such as a game description, goes here. The box width is .6 of entire line . It splits lines depending on how wide it is, to squish the text into the box.

Put box around an equation like this:

$$5 = x^2 \quad \boxed{24v = 6\alpha t + (1-\alpha)g^7} \quad 67 = \int\limits_0^8$$

```
␣\mbox␣and␣\fbox␣make␣boxes␣without␣and␣with␣borders,␣to␣keep␣text
together.␣There␣can't␣be␣a␣line␣break␣in␣the␣middle␣of␣that␣kind␣of
box.␣For␣a␣box␣that␣spans␣multiple␣lines,␣use

\bl␣usepackage{boxedminipage}



\begin{boxedminipage}[c]{0.6␣\linewidth}
Text␣that␣I␣want␣to␣box,␣such␣as␣a␣game␣description,␣goes␣here.␣The␣␣␣␣box␣width␣␣is␣.6␣of␣ent
␣␣\end{boxedminipage}


Put␣␣box␣around␣an␣equation␣like␣this:
$$
␣5=␣x^2␣\;\;\;␣␣\fbox{$24v␣␣␣=6␣␣\alpha␣␣t␣+␣(1-\alpha)g^7$}␣␣␣\;\;\;
67=
\int\limits_0^8
␣$$
```

For BEAMER, the way to make a latex file into a presentation PDF similar to powerpoint, see‘ http://www.rasmusen.org/a/beamer-rasmusen.tex and http://www.rasmusen.org/a/beamer-rasmusen.pdf

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RUNNING WITHOUT STOPPING FOR ERRORS

Insert the command \batchmode to run without error messages and without stopping for errors. The *.log file will still be created with all the errors listed in it.

NO AUX FILE OR OTHER SUCH CREATED

\nofiles is the command for that.

The *.log file gets created anyway, though.

DELETING FILES FROM WITHIN LATEX

My next task is to figure out how to have Latex clean up after itself, deleting the *.log, *.aux, temptex.txt, *.out files unless told not to.

To do this, which I haven't figured out yet, one uses the write18 command. Here are some examples of how to use it generally

\write18erase temp1.*

\write18erase temp1.log (doesn't work– new log created anyway.)

\write18copy temp.tex realname.tex

The write18 command doesn't work unless you alter your latex operating files, though. THe designers were fearful of security breaches, since the write18 command would allow a *.tex file to have commands which could take over your computer and, for example, download virus files.

So here is how to enable the write18 command:

```
EnableWrite18=t
```

```
Command execution either happens at \output time or right
away, according to the absence or presence of the \immediate
prefix.
```

```
http://wiki.contextgarden.net/texmf.cnf

in texmf.cnf  set

  shell_escape=t

In Miktex it is totally different. Follow the instructions in:

  http://wiki.contextgarden.net/write18

In the DOS Shell run:

initexmf --edit-config-file=miktex\config\pdftex.ini

and put in the new empty file that creates,

EnableWrite18=t
```

```
Or, I think this would work: create a new file:

   C:\Documents and Settings\All Users\Application
 Data\MiKTeX\2.7\miktex\config\pdftex.ini
```

Its only content should be

EnableWrite18=t

This will be a local supplement to the pdftex.ini file which is in wherever your Miktex2.7 main directory is, and I think it will not be erased when MIktex updates itself.

MOVING AUXILIARY STUFF INTO THE *.TEX FILE, BUT IN THE MIDDLE.

This takes a bunch of fancy stuff, but is not too hard. Here is an example file:

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

 \batchmode
 %  Thus no error messages--see the *.log file for them.

\usepackage{filecontents}

\newif\ifauxfileexists    \IfFileExists{temptex.txt}
{\global\auxfileexiststrue}{\global\auxfileexistsfalse}
    \ifauxfileexists %Do nothing if ifauxfileexists=TRUE.

\else  \begin{filecontents}{temptex.txt}
%% %%%%%
%% This is just filler.
%% %%%%%
 \end{filecontents}     \fi %The end of the  ELSE instructions.

    \input{temptex.txt}
%The real temptex.txt. created later, has all the auxiliary files in it.
 %Run this *.tex file through latex twice or thrice to fix the style.


\hrule %-----------------------------------------------------------------------


\begin{document}


    \huge  \url{http://Rasmusen.org}
```

```
    \begin{filecontents}{temptex.txt}

\usepackage{hyperref}
\hypersetup{colorlinks=  true, urlcolor=blue}

    \end{filecontents}


\end{document}
```

I figured this out with lots of help from peopel at http://groups.google.com/group/comp.text.tex/browse_thread/thread/94ff34113e8c57e/a358fc38446c4762#a358fc38446c4762, and from Erik Quaeghebeur and Scott Pakin in particular.

Maybe also see: http://www-hep2.fzu.cz/tex/texmf-dist/doc/latex/filecontents/filecontents.pdf and http://carroll.aset.psu.edu/pub/CTAN/support/bundledoc/arlatex.pdf.

A USER'S GROUP FOR QUESTIONS

A latex user group that has easy registration and very active readership is at:

http://groups.google.com/group/comp.text.tex/browse_thread/thread/094ff34113e8c57e#

GOOD PACKAGES AND FORMAT:

```
\usepackage[T1]{fontenc}
  \usepackage{lmodern}
&\usepackage{garamond}
%\usepackage{palatino}
% \usepackage{mathpazo}


\usepackage{verbatim}    % verbatim classes
 \usepackage{url} % appropriately display url's
\usepackage{hyperref} \hypersetup{breaklinks=true, pagecolor= white, colorlinks= true, linkcol
  \usepackage{longtable}
\usepackage{graphicx}
\usepackage{amsmath}

 \reversemarginpar
  \topmargin  -.3in   \oddsidemargin -.1in
  \textheight  8in  \textwidth 6in
  \baselineskip 16pt
 \parindent 12pt  \parskip 10pt
```

PUTTING EVERYTHING INTO ONE *.TEX FILE

The filecontents environment will do this. It puts a section of text into a new file. If you want to overwrite a file name, or use this in the middle of a *.tex document instead of at the very beginning, though, you need to use the filecontents package. See http://www.ctan.org/tex-archive/macros/latex/contrib/filecontents/.

```
\usepackage{filecontents}

%The next section creates the file garamond.sty.
\begin{filecontents}{garamond.sty}
%%
%% This is file ‘garamond.sty‘
%%
%% This file is under the public domain.
%% Original author: Gael Varoquaux
%%       gael dot varoquaux at normalesup dot org
\pdfmapfile{=ugm.map}
\let\rmdefault@garamond\rmdefault%

\newcommand{\garamond}{%
\renewcommand{\rmdefault}{ugm}\normalfont%
}

\newcommand{\ungaramond}{%
\renewcommand{\rmdefault}{\rmdefault@garamond}\normalfont%
}
\end{filecontents}
```

1. Introduction

If you try {\heading1 1.Introduction} that will NOT work.

MATH MACROS

(1) f^{-1}'' is better than $f^{-1})''$.

(2) $f{:}A{\to}B$ is better than $f : A \to B$.

(3) $f{\circ}g$ is better than $f \circ g$.

(4) $\mathbb{C}^2$ and $\mathbb{R}^3$ and $\nabla f(x)$

is a
nal
ent.
s quite
ng one,
t?

```
\newcommand{\toarrow }{\hspace{-4pt}\to \hspace{-3pt }}

\newcommand{\suchthat }{\hspace{-4pt} : \hspace{-2pt } }

\newcommand{\smallcircle}{ {\scriptstyle \circ  }  }
\newcommand{\of}{ \hspace{-1pt}  \smallcircle  \hspace{-1pt} }


\newcommand{\C}{\mathbb{C}}
\newcommand{\R}{\mathbb{R}} %For real numbers
\newcommand{\grad}{\nabla}

% For margin comments in small font
\newcommand{\marginlabel}[1]
  {\mbox{}\marginpar{\raggedleft\hspace{0pt}#1}}
\newcommand{\marg}[1]
  {\mbox{}\marginpar{\tiny\hspace{0pt}#1}}
\newcommand{\numeq}[1]{\begin{align}\begin{split} #1
\end{split}\end{align}}

(1) $f^{{\scriptscriptstyle -1} \prime \prime }$ is better than $f^{-1})''$.


(2) $  f \suchthat A \toarrow B $ is better than $ f : A \rightarrow B  $.

(3) $f \of g$ is better than $f \circ g$.

(4)  $\C^2$ and  $\R^3$ and $\grad f(x)$ \marg{Here is a marginal comment. It is quite a long
```

TYPESETTING PAGES AND BOOKS

http://www.economics.utoronto.ca/osborne/latex/PMAKEUP.HTM has notes on page makeup by TeX author Martin J. Osborne

Something important to keep in mind in using Latex is that it is designed for professional typesetters typesetting books, not for scholars writing papers. This means that its code aims at a good-looking, readable, final product, not good-looking, readable input code. Not being WYSIWYG is the result of this. I actually prefer that as a scholar. It means that I can be sloppy about spacing when I type in text and formulas, and I can cut-and-paste with ease. But it means that anything requiring labelling is hard to read in the code. The identity of Section 3, equation (10), and Figure 4a keeps changing. It is much clearer to assign.

FIGURES AND YOUR OWN COUNTERS

How do we make figures not go at the top of a page, but rahter next towhere they are referneced? Don't use the begin figure end figure environment. Instead typeset the figures yourself, and use your own counter.

Unforunately, figures tend to float anyway.

The following creates the new counter named figurecounter and starts it at 0. It immediately is stepped up to 1, and the label fig11 is associated with 1.

(1) “I will use Figure 1”

(2) ‘ ‘I will use Figure 2 ’ ’

This was generated by:

```
\newcounter{figurecounter}
\setcounter{figurecounter}{0}
\refstepcounter{figurecounter} \label{fig11}

(1)‘‘I will use Figure \ref{fig11}’’

\refstepcounter{figurecounter}  \label{fig22}

(2)  ‘ ‘I will use Figure \ref{fig22} ’ ’
```

PDF and LATEX

PDF: Foxit Reader. . When I process inLatex, I can process and produce a new PDF even while the old one is open. I then need to close it in Foxit and reopen it to see th enew one, though– there is no RELOAD command.

MICROSOFT WORD and LATEX and PDF

Acrobat 9 pro will convert PDF to WORD, so I can do everything in latex and convert later.

FONTS

http://www.tug.org/fonts/special-s.pdf

http://www.tug.dk/FontCatalogue/mathfonts.html"Fonts with Math Support" and other fonts too.

Seventh Circuit: http://www.ca7.uscourts.gov/Rules/type.pdf

Mathpazo, New Century, Palatino, Garamond are all good. The palatino font used in Mathpazo has stupid quotation marks that are like double primes and do not distinguish between starting and ending quotation marks. So Garamond is better. Lmodern is pretty good too (Latin Modern).

See http://gael-varoquaux.info/computers/garamond/index.html

To use the command \garamond, make sure garamond fonts are in a folder in the same directory as this main *.tex file, and that the file garamond.sty is in the same directory as the main *.tex file (NOT just in the font directory). Garamond is btter than mathpazo

or palatino because it has true quotation marks. Also, put the following commands before BEGIN DOCUMENT:

```
\usepackage[T1]{fontenc}
  \usepackage{lmodern}
\usepackage{garamond}


 Then to use garamond, do this:

\garamond

 This text is in Garamond font.

\ungaramond

 This text is in  Computer Modern
```

FONTS

Latex has some very impressive calligraphy and cursive fonts at:

http://www.tug.dk/FontCatalogue/calligraphicalfonts.html

AREV is a good font for overheads. I don't like beamer; just user ordinary latex.Then you can reveal the slides slowly in a simple way. \usepackage[T1]fontenc \usepackagearev

---

Use instead of $\equiv$, so it is $\stackrel{\rm def}{=}$.

$$x \equiv y \qquad x \stackrel{\rm def}{=} \text{y}$$

```
Use \newcommand{\eqbydefinition}{\rm \stackrel{def}{=}  }  instead of
$
\equiv$, so it is $ \eqbydefinition$.
 $$
x \equiv y  \qquad x  \eqbydefinition y
$$
```

To MAke text all cpaital letters: 3. A MODEL WITH THE SOCIAL PLANNER AS PROSECUTOR

ENDNOTE: THis package does not work with the package that makes sdfdsf commands, so you need to replace all underscores with _.

DOUBLE SPACING

Use package setspace

OR, if you don't want to doublespace footnotes, tables, etc. TRY:

---

p. 144. p. 168 TexBook INTEGRALS

$$\int\limits_0^\pi \qquad \int_0^\pi \qquad \int_0^\pi \qquad \sum_{n=1}^9 \qquad \sum_{n=1}^9 \qquad \sum_{n=1}^9$$

$$\int_0^\pi f(x)dx \qquad \int_0^\pi f(x)\,dx$$

$$\frac{52!}{12!40!} \qquad \frac{52!}{12!\,30!\,10!}$$

$$\sqrt{2}x \qquad \sqrt{2}\,x$$

$$\sqrt{\log x} \qquad \sqrt{\log x}$$

$x^2/2 \qquad x^2/2$

$n/\log n \qquad n/\log n$

$\Gamma_2 + \Delta^2 \qquad \Gamma_2 + \Delta^2$

$$\int\int_D dxdy \qquad \iint_D dx\,dy$$

FROM THE TEXBOOK, JANUARY 7

INTPUT FILE APPEARANCE

Replace the default space command with the equivalent .

There should be some space in the middle of this sentence.

SLANTS AND ITALICS

p. 13 of The TeXBook: *This is slanted Roman typeface.*

p. 14 of The TeXBook: The slant of italic supposedly creates problems if there is a switch back to roman. Therefore, Knuth suggests we put a new control sequence in at the transition back point, like this:

I am switching from italics to roman. If I do it *this way* it does not work as well, he thinks, but I think it is better. On the other hand: (The trick is perhaps helpful *for punctuation.*) (Otherwise we *get this.*) But both look the same to me in this last example.

QUOTES WITHIN QUOTES

He said, “She replied, ‘I will go home’ ”.
versus
He said, “She replied, ‘I will go home’ ”.

CALLIGRAPHIC LAGRANGIAN LETTERS

$\mathcal{L}$ versus $\mathcal{L}$. Both of these look the same.

p. 32. Type H at an error message, or look in the log file, to get an expanded error message.

p. 73, 91. To avoid line breaks, insert a tilde like this: Mr Rasmusen.

p. 74, If you don’t want to have extra spaces after periods and other punctuations, use frenchspacing. It would look like: this. No extra space. No, it doesn’t seem to work.

p. 94. Here is a way to have one output line per input line without putting
after each line. Somehow it put blanks in between, though.

This is one line.

This is one line.

This is one line.

This is one line.

DOUBLE SUPERSCRIPT

Here is how to do one: x^{y^2}. We can have an empty subscrpt or superscript too: $_3$ and ^{superscript}.

GETTING SQUARE ROOTS TO LINE UP

p. 131. What is worse is $\sqrt{x} + \sqrt{y} + \sqrt{d}$ because the y dips down and the d goes up. WHat is better is $\sqrt{x} + \sqrt{y} + \sqrt{d}$. The mathstrut is a box.

Maybe just redefine the commands that are always too narrow:

```
\renewcommand{\hat}{\widehat}
```

p. 135. Variables $\check{x}$ and $\dot{x}$ and $\ddot{x}$ and $\widetilde{x}$ and $\mathring{x}$ and $\breve{x}$. For overlining, $\overline{x}$ is a line of flexible length, whereas $\bar{x}$ is always short.

$\sqcup$ and $\sqcup$ and $\bullet$

p. 135. For double overlines and hats, try this: $\bar{\bar{x}}$ or $\overline{\overline{x}}$ and $\hat{\hat{x}}$ or $\widehat{\widehat{x}}$

p. 135. It’s a good idea to makes lots of macros for common notation, e.g.???

p. 142. To keep bits of fractions from being too small, use struts. Compare

(1) $$a_0 + \frac{1}{\frac{1}{a_1+\frac{1}{a_2+\frac{1}{a_r}}}}$$

and

(2) $$a_0 + \frac{1}{\frac{1}{a_1 + \frac{1}{a_2 + \frac{1}{a_r}}}}$$

p. 143. Fractionlike things:

(3) $$\tfrac{x}{y+2}$$

(4) $$\tbinom{x}{y+2}$$

$$\frac{\frac{x}{y+2}}{\frac{a}{b}}$$

$$\frac{\frac{x}{y+2}}{\frac{a}{b}}$$

p. 147. TexBook. DELIMITERS

$$\left(\left(\left(\left(\right.\right.\right.\right.$$

p. 147.TexBoo EXTRA SPACE IN CONDITIONALS

Tex does conditionals like this:

$$Prob(x|y) = .56$$

That is better than closng up with negative space, but sometimes tex does put in too much space.

$$Prob(x\!\!\!/y) = .56$$

NEGATIVE SPACE

p. 166. TWO FORMULAS ON ONE LINE

$$f(x) = 3x^2 \qquad n \geq 15$$

LIMITS AND MAXIMIZATION

p. 145 TexBook. DOUBLE INDEXES FOR SUMS

$$\sum_{\substack{0\leq i\leq M\\ 0\leq j\leq N}} P(i,j)$$

p. 162.TexBook

$$\Pr_{y\to 0}(g(y) < 5) = \exp 2 + \log(x) - \max_{1\leq a\leq B}(a,x) + \lim_{x\to\infty} g(x)$$

The supposed LiMIT and MAX command are a cheat. They just write Lim or Max and then subscript with the arrow or whatever.

$\lim_{x\to\infty} f(x) = 0$

$\max_{0\leq x\leq 1} x(1-x) = 1/4$

Instead use stackrel, like this:

$$\lim_{x\to\infty} f(x) = 534z + \frac{3}{y}$$

and like $\overset{\max}{x}\, x(1-x)$, for maximization.

I should probably make those into macros, since they take so many commands.

```
\define \limminmax{arg1}{arg2} = \stackrel{\rm  \displaystyle arg1 }
{\scriptscriptstyle arg2}
```

```
p. 145 TexBook. DOUBLE INDEXES FOR SUMS
```

```
$$
 \sum_{\scriptstyle 0  \leq i \leq M \atop \scriptstyle 0  \leq j \leq
N} P(i,j)
 $$


p. 162.TexBook
$$
\Pr_{y \to 0}(g(y) < 5) =  \exp 2 + \log (x)  - \max_{1 \leq a \leq B}
(a,x) + \lim_{x \to \infty} g(x)
$$




The supposed LiMIT and MAX  command are a cheat. They just write  Lim
or Max and then subscript  with  the arrow or whatever.

$\lim_{x\to\infty} f(x)=0$

$\max_{0\le x\le 1}x(1-x)=1/4$

 Instead use stackrel, like this:
$$
 \stackrel{\rm  \displaystyle lim }{\scriptscriptstyle x\to\infty}
f(x)  = 534z + \frac{3}{y}
$$
 and  like
$\stackrel{\rm \displaystyle max}{\scriptstyle x} x(1-x) $, for
maximization.

 I should probably make those into   macros, since they take  so many
commands.
```

This is my bold $\boldsymbol{\beta}$, or you can do it like this

$$\boldsymbol{\beta} \textit{ is bold but not } \beta$$

Or try this boldsymbol method:

$$\boldsymbol{5}x \neq 5x \quad \boldsymbol{\theta}y \neq \theta y$$

A dash has three marks like— this.

A hyphen has two marks quasi–linked like that.

$$
\bar{a}\;\;\breve{a}
$$

$$
\overbrace{a+b+\dots+z}\;\;\;\;\underbrace{a+b+\dots+z}
$$

$$
f(x) \overset{\rm def}{=} x^2 - 3
$$

ROMAN TEXT INSIDE MATH

Use mbox like this:

$$
x = y \text{ if and only if } z = 90
$$

```
␣indicates␣where␣blanks␣are.␣␣Here␣is

␣A␣dash␣has␣three␣marks␣like---␣this.

A␣hyphen␣has␣two␣marks␣␣quasi--linked␣like␣that.


\hrule␣%-----------------------------------------------------------------


$$
␣\bar{a}␣\;\;␣\breve{a}
␣$$

$$
␣\overbrace{␣a␣+␣b+␣\dots␣+␣z}\;\;\;\;␣␣\underbrace{␣a␣+␣b+␣\dots␣+␣z}
$$


\hrule␣%-----------------------------------------------------------------



$$
␣f(x)␣\overset␣␣{\rm␣def}␣{=}␣x^2␣-␣3
␣$$


\hrule␣%-----------------------------------------------------------------


ROMAN␣TEXT␣INSIDE␣MATH

Use␣mbox␣like␣this:
```

```
$$
␣␣x=y␣\;␣\mbox{if␣and␣only␣if}\;␣␣z=90
$$

\hrule
```

VERBATIM

```
␣indicates␣where␣blanks␣are.␣␣Here␣is

some␣text.␣***␣$$$$
```

FOOTNOTES INSIDE TABLES AND MATH

Use the footnotemark command to insert the footnote number. To insert the footnote itself, use

$$x = y^{1}$$

lattice	d	q	last column[2]
square	2	4	1.763

DECIMAL POINTS

The following input:

```
3.14159
16.2
123.456
```

Here is a table with partial hrule, not going all the way across, and partial vrules too.

	Radon	Unexposed
Cancer	$\theta P(cancer\|radon) \cdot n(radon)$	$\theta P(cancer\|unexposed) \cdot n(unexposed)$
Healthy	$\gamma P(healthy\|radon) \cdot n(radon)$	$\gamma P(healthy\|unexposed) \cdot \cdot n(unexposed)$

There are three ways to do comments in Latex.

1. There is a comment hidden on this line.

2. There is a multiline comment hidden on the next lines using a command from the verbatim package I inserted at the start of this file.

[0]Except when $x = 8$.

[1] That's two words in that entry.

3. There is a comment hidden here, just after the comma, using the new comments command I create at the start of this file.

He had submitted a bid ceiling of \$2,100 for a custom-made analog stereo amplifier, and the highest anybody else had submitted was \$1,400, so he was sure to win. disaster struck.

text that I want to box, such as a game description, goes here.

He had submitted a bid ceiling of \$2,100 for a custom-made analog stereo amplifier, and the highest anybody else had submitted was \$1,400, so he was sure to win. disaster struck.

$$\underset{x}{Maximize}\, x^2 - x \text{or} \underset{x}{Maximize}\, x^2 - x$$

$$\begin{aligned} \pi_1^d &= -c + \int_0^{Eu} \left(\int_v^z (u-v) f(u) du \right) g(v) + \int_{Eu}^v \left(\int_v^z (u-v) f(u) du \right) g(v) dv. \\ &= -c + A_1 + A_2. \quad \left\{ \sum_{i=1}^3 x_i \left(\left(\left(\left(\right. \right. \right. \right. \right. \end{aligned} \tag{5}$$

Equation (5) is nonsense. But so are (6) and (7).

$$F(x) = 3x^2 \tag{6}$$

$$= 4z \tag{7}$$

(8)

$$\pi_i = \begin{cases} V - x_i & \text{if } T(x_i) < Min\{T(x_j, T(x_k)\} \quad \text{(Firm } i \text{ gets the patent)} \\ \frac{V}{2} - x_i & \text{if } T(x_i) = Min\{T(x_j), T(x_k)\} \quad \text{(Firm } i \text{ shares the patent} \end{cases}$$

$$\max_{x} x(1-x) \qquad (1-35) \qquad \not{A}\dot{x}, \ddot{x}$$

$$\lim_{x\to\infty} f(x) \quad \int_0^\infty xf(x)\,dx, \quad not, \quad \int_0^\infty xf(x)dx,$$

The two standard ways are the overline, $\overline{U}_i$, and the bar, $\bar{U}_i$. Try this: $\bar{U}$ or try this: $\overline{U}$. Here is $\widetilde{12345}$ Or $\sim$ sometimes. ~sped is for a high tilde. For $\tilde{\text{T}}$ilde in text. Put $\backslash acksquare$ at the end of the proof.[1] How to make x^i_j different from x^i_j. Use $X_i{}^j$ and $X^j{}_i$

This also restarts the numbering to 1. Do you know that a table in on page 2?

```
Here is
 some
 Unformatted
 text  with & \\ #
```

Variable	Minimum	25th percentile	Median	Mean	75th percentile	Maximum
Crimerate	0.56	3.48	5.36	5.97	7.76	22.08
Murderfraction	0.00	0.00	0.00	0.36	0.58	2.50
Pop	1.16	16.76	40.27	116.82	98.72	9329.99

---

undo the commenting to get the figure inserted.

Figure 2: Some Stuff

Table 11: IMF Aid

		Debtor	
		Reform	Waste
IMF	Aid	3,2	-1,3
	No Aid	-1,1	0,0

Payoffs to: (IMF, Debtor).

10pt Default 11pt Option 12pt Option

5pt 6pt 6pt

7pt 8pt 8pt

8pt 9pt 10pt

9pt 10pt 11pt

10pt 11pt 12pt

12pt 12pt 14pt

14pt 14pt 17pt

17pt 17pt 20pt

20pt 20pt 25pt

25pt 25pt 25pt

$$y = x^2 + \pi, \ y = x^2 + \pi, \ {\scriptstyle y=x^2+\pi}, \ {\scriptstyle y=x^2+\pi}$$

Left side text right side

Left side text ..... right side

right side

Here's is one[‡] and here is a second.[§]Here is a third.[¶]

To do asterisk footnotes, do this:[*]

List of Figures

List of Tables

1 The World in 1812 iii

Oranges: a fruit that Amelia likes a lot, just as she likes grapes and pickles.

Lettuce: something Amelia does not like.

> This is the first line of a poem
> Here is the second, hwich is so long that it runs over on to the next line, where it will be indented.
> And here is the third.

The command @ kills the space between columns in a table and replaces it with whatever is in curly brackets. It can be used to cleverly align tables around decimal points, thus:

The table is on page iii.

---

one	be	due to	differences,
one	to	reputation	the sort

[‡]starred note
[§] Daggered footnote
[¶]The third footnote.
[¶*] Here is the footnote.

Variable	Mean.
X	1.234
Y	23.1
Z	1456.34567

Table 1: The World in 1812

The World...

$$
\begin{array}{llllll}
De(s) & & & = 0 & if & s < p \\
Pr(s) & = \frac{(1)g(p)}{g(p)+m(p)[1-G(s^*)]} & = \frac{g(p)}{g(p)+\frac{g(p)}{G(\overline{p}_h)}[1-G(s^*)]} & = \frac{G(\overline{p}_h)}{1-[G(s^*)-G(\overline{p}_h)]} & if & s = p \\
De(s) & & & = 0 & if & s \in (p, s^*) \\
De(s) & = \frac{m(p)g(s)}{g(p)+m(p)[1-G(s^*)]} & = \frac{\frac{g(p)}{G(\overline{p}_h)}g(s)}{g(p)+\frac{g(p)}{G(\overline{p}_h)}[1-G(s^*)]} & = \frac{g(s)}{1-[G(s^*)-G(\overline{p}_h)]} & if & s \geq s^*
\end{array}
\tag{9}
$$

Notes

[1]Here it is.

```
December 10,  2008/Augut 1, 2009.

What is below is from

 latex-rasmusen.txt


----------------------------------------------------------------------

SCIENTIFIC WORKPLACE

Here's what to do to convert a SWP-made file into one that regular
latex can process:

1. Delete the line    \input{tcilatex}  which I think Scientific
Workplace will put back in for you automatically when you load it.

2. Change \frame{  to {\tt , which will result in a line of  nonsense
where each figure was, but will allow latex to process the file
without trouble.



----------------------------------------------------------------------

PICTURES
```

Latex actually makes pretty good pictures. Here is how to make a 200x100 mm picture, with 0,0 as its base point, and a line sloping up in direction (1,1) and 50mm long starting at (0,0):

```
\begin{picture}(200,100)(0,0)

 \put(0,0) {\line (1,1){50}}


 \end{picture}
```

BOLD MATH

LaTeX ignores the \bf in stuff like ${\bf \beta}$, but has \boldmath to get around this. Unfortunately, it only works in text-mode, not math-mode. But you can get around this by defining a new command for each symbol you want boldfaced:

```
\newcommand{\bbeta}{\mbox{\boldmath$\beta$}}

This is my bold $\bbeta$, or you can do it like this
$$
\bbeta \; is \; bold \; but\; not \; \beta
$$

 Or try this boldsymbol method:

$$
 \boldsymbol{5}x \neq 5x \;\;\;\boldsymbol{\theta}y \neq \theta y
$$
```

ROMAN TEXT INSIDE MATH

Use mbox like this:

```
$$
  x=y \; \mbox{if and only if}\;  z=90
$$
```

```
$$
 \bar{a} \;\; \breve{a}
 $$
```

```
$$
 \overbrace{ a + b+ \dots + z}\;\;\;\;  \underbrace{ a + b+ \dots + z}
$$
```

```
$$
 f(x) \overset  {\rm def} {=} x^2 - 3
 $$
```

\begin{table} does tables as floats, trying to go at the top or bottom of pages. \begin{tabular} puts them wherever they happen to be, skipping everything and going to the next page if there isn't room and just leaving blank space behind. Thus, \begin{table} is better. It is an EXTRA command, though. You still need to use TABULAR too, like this:

```
 \begin{table} \begin{tabular} {ll}
   First & Second & Third\\
A  new row & Has\footnotemark & New text\\
\end{tabular}\end{table}
```

VERBATIM

\begin{verbatim*} indicates where blanks are.

FOOTNOTES INSIDE TABLES AND MATH

Use the \footnotemark command to insert the footnote number. To insert the footnote itself, use

```
 \addtocounter{footnote}{-1}\footnotetext{Here is my footnote}
\stepcounter{footnote}
```

outside the table or math but trying to be on the same page.

```
$$
  x = y\footnotemark
$$

 \addtocounter{footnote}{-1}\footnotetext{Except when $ x= 8$. }
\stepcounter{footnote}


\begin{tabular}{|l|l|r|l|}
\hline
lattice & $d$ & $q$ & last column\footnotemark \\
\hline
square & 2 & 4 & 1.763 \\
\hline
\end{tabular}


\addtocounter{footnote}{-1}\footnotetext{ That's two words in that
entry.   }
\stepcounter{footnote}
```

@

DEFINING YOUR OWN COUNTERS AND LABELS.

This is tricky in Latex, because while you can define new counters, I can't see how you would attach their values to labels. The \label command can only be used in environments that have their own counters (such as \begin{equation}), and you can't fool those environments into adding to a counter without having them print the value on the printed page somewhere. So I used Tex programming, like this. I create a new counter named \fignum and then attach it to a label called \1f, \2f, and so forth, advancing the counter in between. I used \edef rather than \def because \edef inserts the value at the particular time, while \def would repeat the command \number\fignum each time \1f was

written.

```
\newcount\fignum\fignum=1


 \edef\1f{\number\fignum}

  \advance\fignum  by 1


   \edef\2f{\number\fignum}
```

Example: Figure \1f says this. The second part of it, Figure \1fa, says something different. Figures \2f and \2f-a say something still different.

This is plain Tex, not Latex.

You need to write backslash-1-f rather than backslash-f-1. I'm not sure why-- it must be that the number gets interpreted as doing something special to the definition rather than being part of the name.

You have to remember to put your definitions earlier in the document than when you use the term defined. You could put them all the start, actually, but then you might forget to re-order them when you change the order of the diagrams.

I think you can advance the fignum variable by a negative number if you want to.

BIBTEX.

I'm not sure if this is worth using or not. Here's how it works with Miktex.

1. For your file myfile.tex, construct a bibliography database file myfile.bib with a bunch of entries like this, which do not not have to be in alphabetical order:

```
 @article{hotelling:1929:ej,
  author = {Hotelling, Harold},
  journal = {Economic Journal},
  month = {mar},
  number = {153},
  pages = {41--57},
  publisher = {Royal Economic Society},
  title = {Stability in Competition},
```

```
  volume = {39},
  year = {1929}
}
```

You can do this from Google Scholar by going to Scholar Preferences and checking off towards the bottom that you want a Bibtex-format link. After you set your prferences, Import into BibTeX will be a link fror each item a Google Scholar search turns up.

2. Pick a style file such as econometrica.bst. Put that file and the myfile.bib file into the same directory as myfile.tex.

3. Wherever you want the references in myfile.tex, insert the commands

```
\bibliographystyle{econometrica} %needs  econometrica.bst file in
folder
 \bibliography{myfile} %needs myfile.bib file in folder

 \nocite{*}
```

The nocite command makes sure that all the entries in the myfile.bib file get put into the references. Otherwise, only the ones cited using bibtex commands get put in. The bibtex citing commands are just extra commands to remember and make reading latex input files harder, so I don't think I'll use them.

4. Change the name of myfile.tex to plain myfile.

5. Run myfile through pdflatex. That will create myfile.aux.

6. Run myfile through bibtex. That will use myfile.aux and econometrica.bst and myfile.bib to create myfile.blg, a log file, and also myfile.bbl, the bibliography formatted nicely.

7. Run myfile through pdflatex again.

DATES

Put the last revision date of a paper on manually, e.g. May 20, 1998.
Also, put the commands "pdf'd \today".

\BEGIN{CASES} FOR EQUATIONS WITH SEVERAL CASES:

This will be useful. It puts a big curly bracket after the equals sign to enclose the various cases that can occur. You need to have \bl usepackage{amsmath, am

```
\begin{equation*}
|x|=
\begin{cases} x & \text{if $x=0$,}
\\
-x &\text{if $x\le 0$.}
\end{cases}
\end{equation*}
```

Here is a table with partial hrule, using the cline command across columns 2 and 3, not going all the way across, and partial vrules too.

```
\begin{tabular} {lcc}
  & Radon & Unexposed  \\
  &  &      \\
\cline{2-3}
  &  \multicolumn{1}{|c|}{ }  & \multicolumn{1}{|c|}{ } \\
 Cancer  &\multicolumn{1}{|c|}{$ \theta P(cancer|radon) \cdot n(radon)
$}
&\multicolumn{1}{|c|}{$\theta P(cancer|unexposed)  \cdot
n(unexposed) $  }    \\
  &     \multicolumn{1}{|c|}{ }  & \multicolumn{1}{|c|}{ } \\
\cline{2-3}
  &      \multicolumn{1}{|c|}{ }  & \multicolumn{1}{|c|}{ } \\
Healthy &\multicolumn{1}{|c|}{$\gamma P(healthy|radon)\cdot n(radon) $
} &\multicolumn{1}{|c|}{$\gamma   P(healthy|unexposed)  \cdot
\cdot n(unexposed)     $ }  \\
  &       \multicolumn{1}{|c|}{ }  & \multicolumn{1}{|c|}{ } \\
\cline{2-3}
\end{tabular}
```

COMMENTS.

There are three ways to do comments in Latex.

1. The standard way to do comments puts in % and then everything on the line after it is commented out:

First I have some input, like $y = x^2 + \beta$. %Here is a comment.

2. If you put \usepackage{verbatim} at the start of your file, you can do multiline comments like this:

```
\begin{comment}
  Here is the first line of the comment.
 Here is the second line.
 Here is the third.
\end{comment}
```

3.If you put \newcommand{\comments}[1]{} at the start of your file, you
can have the best way of all:

Say $y = x^2 + \beta$.\comments{Here is my comment. } Maybe $x= 4\phi$.

  Note that if you use \usepackage{verbatim}, it creates an odd command that makes everything after it in the file a comment. Suppose you write:

\comment{Here is what I wanted to be my comment.} Here is some more writing for my paper.

Then not only will the words in the brackets be a comment, but all the words after the brackets and on the next lines and pages too.

SPECIAL EQUATION NUMBERING

CURRENT WAY: Put a star after the equation command to suppress numbering, like \begin{equation*}... \end{equation*}. Whether or not you do that, you can put \tag{A1} on a particular line to make it label as equation (A1) (It adds the parentheses automatically); or \notag so there is no equation number displayed. To add a label that you can refer to later, put in \label{A1}. Then later you can refer to it as equation \eqref{A1}, which comes out as "equation (A1)". Note that \eqref puts in the parentheses automatically; \ref does not.

\align replaces \array, they say.

HERE IS AN OLD WAY To put in your own equation number (1-35), without changing the stnadard ordering, do this,putting the command at the end of your equation (after the \end{array} if it is an array). Remember to use $$, not \begin{equation}.

```
 $$ \label{e1-35}
    f(x) = x^2+34  \eqno{(1-35)}
$$
```

```
\usepackage{hyperref}
\hypersetup{breaklinks=true,
pagecolor=white,
colorlinks=true,
linkcolor= blue,
hyperfootnotes= true,
urlcolor=blue
}


\urlstyle{rm}
 %so it doesn't use a  typewriter font for url's.

\url{
http://ihome.ust.hk/~tanjim/verylongaddresslikethisone-111111zxzxzxzxz
xzxzx
zxzxsqut_high.pdf}

 This will use the package hyperref, and turn the address in
\url{sdfd} into a link, as well as displaying sdfd in the text in
color (which will look grey when printed).  Also, it will split the
address sensibly across lines.  The web address can include tilde and
underscore without special control characters, which is not usual in
tex. Also, references  to  footnotes, pages, and to equations and
other \ref{sdf}   will be links to the original equations. If want a
reference to use the correct counter  but not to create a link   use
\ref*{label} or  \pageref*{label}.

The manual for hyperref is at:

http://www.tug.org/applications/hyperref/manual.html#x1-90003.5

\url{sdfd} is a separate macro though, which I think can work even if
you don't use hyperref  (but you want to split up across lines
sensibly, and be able to use underscore and tildes).
```

VARIOUS LITTLE COMMANDS

```
\pagenumbering{roman}  This also restarts the numbering to 1.

\not\exists for an exists symbol with a slash through it.



A special little extra space  is proper for integrals, like this:
$$
\int_0^\infty x f(x)\,dx,\;\;\; not,\;\;\; \int_0^\infty x f(x)dx,
$$

 To put the limits ofthe integral above and below the integral sign,
rather than at the sides ofthe top and bottom, say
$$
 int\limits_0^1
$$





 I should use notation like $\dot{x}$ and $\ddot{x}$ sometimes.

\dotfill for a long line of dots.

UNDERSCORE, UNDERLINE  \_ is ok, no math $$ needed.

\begin{verbatim}
```

REFERENCE LISTS GOING OVER SEVERAL PAGES

For reference lists, use

Rasmusen, Eric (1980) *A Book*.

That will generate a list with the first word (Rasmusen) off to the left a bit and the rest indented from it.

If I have a long document, sometimes long multipage lists go crazy in latex and won't put in a pagebreak at the right spot. The solution is to break off the list as a separate document, say, list1.tex. Use to start it at page 522. If there are labels such as page numbers that are needed, they will be in a *.aux file in the main document. Copy that *.aux file to the preamble, before begindocument, of the list1.tex document.

———————————————————————-

———————————————————————- SHADED TABLES:

\usepackage[table,x11names,svgnames]xcolor

\rowcolors2black!10black!5

\begintabularl | llllll \hline \rowcolorblack!25 Variable zzz Minimum zzz 25th percentile zzz Median zzz Mean zzz 75th percentile zzz Maximum\\\hline \hline Crimerate zzz 0.56 zzz 3.48 zzz 5.36 zzz 5.97 zzz 7.76 zzz 22.08\\Murderfraction zzz 0.00 zzz 0.00 zzz 0.00 zzz 0.36zzz 0.58 zzz2.50\\Pop zzz 1.16 zzz 16.76 zzz 40.27 zzz 116.82 zzz 98.72 zzz9329.99\\\hline \endtabular

———————————————————————-

HYPERLINKS FROM PDFs

usepackage[bookmarks=true,bookmarksopen=true,colorlinks= true,urlcolor= red!60!black,linkcolor=blue!80,pd hyperref

\hrefmailto:erasmuse@indiana.eduerasmuse@indiana.edu

\urlhttp://www.rasmusen.org

———————————————————————-

DIAGRAMS-FIGURES

Diagrams: use alt-PRINT SCREEN to do a screen capture and use PAINT to make a JPG. Or, use powerpoint, and SAVE AS a jpg file.

In miktex, diagrams are simple. Just insert:

\beginfigure \centering \includegraphics[width=80mm]options2.jpg \captionFigure 2: Pointwise and Extremum Riskiness \endfigure

or even just

\includegraphics[width=80mm]options2.jpg

To get the caption not to automatically number, use:

usepackageeccaption \captiondelim\renewcommand\thefigure \renewcommand\figurename

The folowing is useful to get figures put on the same page with text instead of off on their own pages.

\renewcommand\floatpagefraction.9 \renewcommand\topfraction.9 \renewcommand\bottomfraction.9 \renewcommand\textfraction.1 \setcountertotalnumber50 \setcountertopnumber50 \setcounterbottomnumber50

Be wary of using pdf's instead of jpg's. If a pdf is cropped, soemtimes it is not truly

cropped-and all the white space does show up in the tex file.

POWERPOINT

http://www.ecs.soton.ac.uk/~srg/softwaretools/presentation/TeX4PPT/ This is the best of the two tex powerpoint programs. Free, and easy to install. Needs Powerpoint 2002.

```
 INTEGRALS AND PRODUCTS AND SUMMATIONS IN FRACTIONS

 Q: If I  use a \bl prod or \bl int within a \bl frac{}{} they end up very
small
with the sub/superscripts alongside rather than above or below.

Answer:

\bl frac{\bl displaystyle \bl int_a^b dx f(x)}{\bl displaystyle \bl prod_{i=1}
^{\bl infty} a_i}

<A HREF=" http://www.cse.iitd.ernet.in/~anup/homepage/UNIX/latex.html
">"Some useful tips and tricks in LaTeX".</A>

  More generally:




-----------------------------------------------------------------------


  TILDES

FOR WIDE TILDE ON TOP OF SOMETHING:  \bl widetilde{12345}

FOR TILDE IN TEXT, NOT on top of something: $\bl sim$ . This is what to
use in URL's.

 \bl textasciitilde is for a high tilde (no  dollarsign  needed). $\bl sim$ is for a
midlevel tilde.

For Tilde in text, on top of the next letter: \bl ~


-----------------------------------------------------------------------
```

PUTTING THINGS ON THE SAME PAGE (Does this really work?)

Put \bl begin{samepage}...\bl end{samepage} around the whole mess.

<A HREF=" http://www.cse.iitd.ernet.in/~anup/homepage/UNIX/latex.html
">"Some useful tips and tricks in LaTeX".</A>

MAXIMIZING F(X) BY CHOICE OF X

```
$$
   {Maximize \bl atop x } x^2-x
$$


$$
   {Maximize \bl atop  \bl scriptstyle{x} } x^2-x
%Tthe scritpstyle is too small, really.
$$
```

BRANCHING "IF" DEFINITIONS

Sometimes I want to use a big bracket to say X=2 if Y<3 but X=5 if
Y \bl geq 3.
Here's the style for that:

```
\bl begin{tabular}{ll}
 $ \bl pi_i =$zzz $\bl left\bl { \bl begin{tabular}{lll}
  $V-x_i$ zzz if
$T(x_i) < Min\bl { T(x_j, T(x_k) \bl } $  zzz (Firm $i$ gets the patent)\bl \bl
 zzz zzz \bl \bl
$\bl frac{V}{2} - x_i$ zzz if $T(x_i) = Min \bl {T(x_j),T(x_k)\bl }    $ zzz (Firm
$i$ shares
the patent
 \bl \bl
\bl end{tabular} \bl right.$\bl \bl
\bl end{tabular}
```

PROOF END SYMBOL

```
 At the start, have:
     usepackage{graphicx}
 usepackage{amsmath}
       \bl usepackage{amssymb}
 Then put $\bl blacksquare$ at the end of the proof.
```

FORMAT FOR A TWO-BY-TWO GAME

```
\bl begin{center} {\bl bf Table 11: IMF Aid }

 \bl begin{tabular}{lllccc} zzz          zzz
zzz\bl multicolumn{3}{c}{\bl bf Debtor}\bl \bl
 zzz      zzz       zzz Reform   zzz    zzz  Waste \bl \bl
zzz  zzz  Aid       zzz    3,2   zzz    zzz  -1,3 \bl \bl
 zzz {\bl bf IMF}    zzz          zzz    zzz     zzz   \bl \bl
 zzz zzz No Aid     zzz -1,1       zzz  zzz   0,0 \bl \bl
 zzz      zzz          zzz    zzz     zzz   \bl \bl
  \bl multicolumn{6}{l}{\bl it Payoffs to: (IMF, Debtor).}\bl \bl
 \bl end{tabular}\bl \bl
 \bl end{center}
```

RAGGEDRIGHT, LEFT JUSTIFICATION

The tex default is to right- and left-justify the page, which looks very professional. I just read, though, that psychologists find this actually slows down reading compared to just left-justifying, because people are not used to the diverse spacing of letters and words that is required for uniform margins on both sides. Also, a raggedright looks better for working papers, I think.

The command for that is

```
 \bl begin{raggedright}

 \bl parindent 24pt

 \bl parskip 10pt

 \bl end{raggedright}
```

You need to put the parindent and parskip commands AFTER the begin{raggedright}

PROCESSING TEX

The free Miktex (<A HREF="http://www.miktex.org/">http://www.miktex.org/</A>) looks to be an excellent latex and tex Windows processor program. I've been using SWP, and putting figures in looks to work better in Miktex. Miktex gets PDF's right, which my version of SWP does not always do, and it processes straight from myfile.tex to myfile.pdf. On the other hand, it has some problems, noted below, which make it unhandier to use.

I think I've foudn the best solution. In textpad, create a new TOOL in CONFIGURE-PREFERENCES. Choose ADD, then DOS COMMAND, then write pdflatex \$file

(1) I have a suggestion for the standard installation instructions: say more about the Windows command prompt. I haven't used it for years, though I happened to remember it was in Accessories. Also, the user should know that he can change the default directory in teh command prompt to wherever he keeps his tex input files-- say, d:/smith/latex-input, using the Properties (reachable by right clicking the command prompt).

(2) The command prompt requires you to type in all your commands, which is burdensome if they are long, e.g.,

pdflatex D:
\bl _home\bl _HomeWD\bl INCOMING\bl FIGURECOPY/myfilewithalongname.tex

You can't copy and paste in the usual way with CTRL-C and CTRL-V. What you can do, though is to copy to the clipboard with CTRL-C and then paste by rightclicking on the Command Prompt program and choosing PASTE.

I will put a comment line like this at the start of my tex files:

% pdflatex chap07_MoralHazard.tex

then I can copy all but the % part and paste it into the command prompt, and it will process chap07_MoralHazard.tex and write to chap07_MoralHazard.pdf

(3) Something better would be a graphic interface to replace the command prompt. I don't know how to write such an interface, but here is what it would be: It would be simple: just a window in which the user could do two things:

1. Browse and choose a tex file to process, e.g.,

myfilewithalongname.tex, instead of having to type in the full name in the command prompt, and instead of having to have it in the command prompt's directory.

2. Issue the processing command--- most simply "latex myfilewithalongname.tex", or "pdflatex", or others that might be useful. There should be two to five choices, and the user would check the box of the command he wants to use.

The command would take the file from (1) and put the output in the same directory as the input.

The interface could be fancier, but that covers what the user needs every single time he uses Miktex, and it would save a lot of tricky typing.

(4) Miktex is fouled up by carriage returns, even ones that are not hard breaks. Thus, before I tex my files using it I need to strip off all the carriage returns, thus making all my equations, nicely separated into separate lines for visibility, into unreadable paragraphs

With the help of Alan, I solved this problem. What I had to do was to save my file as DOS or UTF-8 instead of as ANSI.

SIZING

PRODUCTS
Use \bl prod, NOT \bl Pi , with {\bl displaystyle \bl prod_1^3} if necessary.

THE LARGE CURLY BRACKET:
\bl left\bl {

THE LARGE SUMMATION SIGN: Use \bl sum, NOT \bl Sigma, with {\bl displaystyle \bl sum_1^3} if necessary.

For integrals, to get them in the large style in Arrays or in text use {\bl displaystyle \bl int_0^1}.

```
\bl begin{array}{ll}
   \bl pi_1^d   zzz ={\bl displaystyle -c +  \bl int_0^{Eu} \bl left(  \bl int_v^z (u-
```

```
v)
f(u) du \bl right) g(v) + \bl int_{Eu}^v \bl left(  \bl int_v^z( u-v) f(u) du
\bl right) g(v)dv. }\bl \bl  zzz \bl \bl
  zzz= -c + A_1 + A_2. \bl \bl
\bl end{array}
```

To change size of any operator like { | } [ ] ( ), one need to use commands

```
\bl big
\bl Big
\bl bigg
\bl Bigg
```

For example, \bl bigg| These command are in order of increasing size. This
is especially good for |, since it can take superscripts and subscripts
properly then, unlike with \bl left|

EQUATION ARRAYS

```
\bl begin{eqnarray}
 F(x) zzz= zzz3x^2\bl \bl
 zzz zzz \bl nonumber \bl \bl
 zzz =zzz 4z
\bl end{eqnarray}
```

Use \bl begin{eqnarray}* to not have any nubmers. Note that there are always 3 columns. The newer versino of this is
\bl begin{align}...\bl end{align}, which is easier to type and they say looks better and handles long equations better so the euqation number doesn't get overwritten.

PAGE HEADERS

For a title page, use \bl titlepage or \bl thispagestyle{empty}

```
\bl pagestyle{myheadings}
 \bl markboth  {  Ramseyer-Rasmusen }{ Ramseyer-Rasmusen}

OR,

\bl pagestyle{myheadings}
   \bl markboth { } {$\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\b
\bl ;
\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl
\bl ;
\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;\bl
\bl ;
\bl ;\bl ;\bl ;\bl ;\bl ;\bl ;$
Lyon and Rasmusen }

 % these two things in conjunction put the page nubmers at the upper %
right of each page, with "Lyon and Rasmusen" just before them.

 BBusepackage{fancyhdr}  BBpagestyle{fancy}   BBfancyhead{}
 BBfancyfoot{}   BBrhead{ BBthepage}

 Above is the fancyhdr package, w hich is tricky to use. The BBfancyhead{} and foot clear out
-----------------------------------------------------------------------

 EQUATION STYLES

 documentclass[12pt,epsf,leqno, fleqn]{article}

     This is for left equation numbering, and for not centering the
equations but rather putting them towards the left at a fixed indent
from the margin.  documentclass is always better than   documentstyle,
because it permits packages to be used. Also, this does 12 pt type.



-----------------------------------------------------------------------



DOUBLE SPACING

  \bl baselineskip 24pt

 This goes AFTER Begin Document.



-------------------------------------------------------------
```

```
 \bl topmargin -1.5in
```

DIFFERENT FONTS: But these do not reliably work.

```
{\bl sf sans serif.  Christianity depends ...}
{\bl tt typewriteer. might occur. }
{\bl rm Roman. Christianity depends on ancient  }
```

I like the palatino font better than Times New Roman. Here is a package that uses it, and which uses Helvetica for its sans serif font: \bl usepackage{mathpazo}

For cursive font, use the pbsi package and \bl textbsi{ a command like this.}

```
  usepackage[T1]{pbsi}
```

MATH FONTS

These are different from the others (LARGE, etc.)

```
  \bl textstyle - default in the running text and in array environment
     \bl displaystyle - default for displayed equations
     \bl scriptstyle - default for first-level sub and superscripts
     \bl scriptscriptstyle - default for higher-level sub and
superscripts
```

"Left side text \bl hfill right side"

The hfill command is good for putting text on each side of a page.

" ~ \bl hfill right side"

The tilde ~ can be used for a space. "\bl ;" works just as well. I think \bl quad or \bl \bl quad works better in math mode-- maybe it's intelligent and makes the space a nice-looking length.

FOOTNOTES WITH SYMBOLS

```
 This will make the first footnote an asterisk and the second one a
dagger,and
then goes back to the default, nubmers, starting with number 1.

\bl renewcommand{\bl thefootnote}{\bl fnsymbol{footnote}}

 Here's is one\bl footnote{starred note} and here is a
second.\bl footnote{Daggered footnote}

 \bl renewcommand{\bl thefootnote}
\bl setcounter{footnote}{0}

  To do asterisk footnotes, use the command:

  Here is the text$^*$\bl footnotetext{$^*$ Here is the
footnote}.
```

FOR OVERHEADS AND HANDOUTS

```
   \bl reversemarginpar
  \bl topmargin  -1in
  \bl oddsidemargin -.25in
 \bl textheight  8.7in
 \bl textwidth 7in
\bl pagestyle{empty}
```

LISTS

```
\bl listoffigures
 \bl listoftables
```

```
\bl begin{description}
\bl item[Oranges:] a fruit that Amelia likes a lot, just as she likes
grapes and pickles.
\bl item[Lettuce:] something Amelia does not like.
\bl end{description}
```

```
\bl begin{verse}
 This is the first line of  a poem\bl \bl
 Here is the second, hwich is so long that it runs over on
to the next
line, where it will be indented.\bl \bl
 And here is the third.\bl \bl
 \bl end{verse}
```

```
\bl begin{comment}% I need to have \bl usepackage{verbatim}
 This is a comment.
\bl end{comment}
```

```
The table is on page \bl pageref{t1}.
 %This  prints the page number where label t1 is found.
```

```
{\bl it Here is some italics but with \bl emph{these words} emphasized in
Roman.}   I can also use the same command to get \bl emph{italics} in the
middle of Roman words.
```

```
Use $\bl Beta$ in tex, rather than $B$, so I can  globally change it
easily  later.
```

```
http://www.mackichan.com/

    Here is how to make a tex DVI file into a
postscripgt file:

dvips   9.dvi -Z -o  myfile.ps

  The -Z compresses it. The postcript files are quite large, though.
(394K from
70 K, for example, with 3 diagrams). The -Z commadn will comrpess it
```

about 40
prcent, I think, and it will still pirint drictly.

TO TURN A DVI FILE INTO AN ASCII FILE:

uuencode 9.dvi 9.dvi> negot.asc

The command @{} kills the space between columns in a table and
replaces it with
whatever is in curly brackets. It can be used to cleverly align tables
around
decimal points, thus:

\bl begin{table} [! h] %This puts the table right here, not
floating.
Or just try:
\bl begin{table}[h]

\bl begin{table}[! h t] %This puts the table here or top
\bl begin{figure}[! b f] %This puts it at the bottom or on a
float page.

\bl begin{table}[!b] \bl label{t1}
\bl begin{tabular} {l r @{.} l}
Variable zzz Mean\bl \bl
X zzz 1 zzz 234\bl \bl
Y zzz 23 zzz 1\bl \bl
Z zzz 1456 zzz 34567\bl \bl
\bl end{tabular}

\bl caption{The World in 1812} %This will appear as Table 1:
The World...
\bl end{table}

(I Haven't tried this)

I need to write large tables that span many pages; I tried the tabular environment but found out that it put everything on one page, with most of the text going down the drain, i.e. below the physical page. Is there a way of doing this smoothly, that is, without breaking the large table into smaller ones that would approximately fit into one page each? Answer: For LaTeX2e: You should look into either supertab.sty or longtable.sty, both can be found in:

   /usr/um/generic/tex3.141/latex2e/tools/

with documentation in:

   /usr/um/generic/tex3.141/latex2e/tools/doc/

in the form of .dtx and .dvi files, you can run LaTeX on the .dtx files, or simply look at the .dvi files.

PACKAGES
 To put in a package: All packages are located in TCItex/tex/latex . I am not sure if I can put a new one in with a new directory, and it will get read in. Tha owrked at the office, but not at home, f or a0poster. I can just use ADD to get verbatim.

A0poster is good for large font sizes.
 documentclass[article]{a0poster}
 usepackage{a0size}

  In TEXTPAD, hard breaks are put in, sometimes in

awkward places, so I may have to do some fiddling to make sure key commands do not get cut across lines.

The easiest way to get headings of funny 'sections' such as prefaces in the table of contents is to use the counter secnumdepth described in Appendix C of the LaTeX manual. For example:

```
  \bl setcounter{secnumdepth}{-1}
  \bl chapter{Preface}
```

Of course, you have to set secnumdepth back to its usual value (which is 2 in the standard styles) before you do any 'section' which you want to be numbered.

Similar settings are made automatically in the LaTeX book class by the \bl frontmatter and \bl backmatter commands.

This is why it works: \bl chapter without the star does

1. put something in the .toc file;
2. if the secnumdepth counter is greater than or equal to zero, increase the counter for the chapter and write it out.
3. write the chapter title.

From the NoT os short intro to Latex 2e

\bl include {chap2.tex, chap2.tex, chap3.tex}

\bl includeonly{chap2.tex} %This means only chap2.tex will be included.

This does not work in SWP.

For packages:
http://www.ctan.org/tex-archive/help/Catalogue/alpha.html

ADVICE TO BEGINNERS

Do not use commands like \bl section{sd}, \bl theorem{sd} and so forth. In reading the ms, this means you cannot see th enumber of the section or theorem. It is easier, for articles as opposed to books, just to use boldface and noindent directly.

```
\bl begin{tabbing}
 % set the tab positions
 \bl hspace {1in} \bl =   \bl hspace {1in} \bl = \bl hspace {1in} \bl = \bl hspace {1in}
\bl \bl
  one  \bl > be \bl >  due to \bl > differences,\bl \bl
 one  \bl > to \bl > reputation \bl > the sort\bl \bl
\bl end{tabbing}
```

MY STANDARD FORMATTING HEADER:

```
documentclass[12pt,epsf]{article}
 usepackage{mathpazo} % for palatino font

 usepackage{verbatim} % for  \bl begin{comment} feature.

 usepackage{ccaption} \bl captiondelim{}\bl renewcommand{\bl thefigure}{}
\bl renewcommand{\bl figurename}{} %for good figure captions

\bl renewcommand\bl floatpagefraction{.9}
\bl renewcommand\bl topfraction{.9}
\bl renewcommand\bl bottomfraction{.9}
\bl renewcommand\bl textfraction{.1}
```

```
\bl setcounter{totalnumber}{50}
\bl setcounter{topnumber}{50}
\bl setcounter{bottomnumber}{50}

 usepackage{hyperref} \bl hypersetup{breaklinks=true, pagecolor=white,
colorlinks=
true, linkcolor=black, hyperfootnotes= false, urlcolor=blue }
\bl urlstyle{rm}

 usepackage{graphicx} %for pictures

 usepackage{amsmath}

 usepackage{amssymb}


\bl reversemarginpar
  \bl topmargin  -.3in
  \bl oddsidemargin -.1in
  \bl textheight  8.5in
  \bl textwidth 7in
  \bl baselineskip 16pt




     begin{document}

\bl titlepage

\bl begin{raggedright}

 \bl parindent 24pt

 \bl parskip 10pt

adsfqdfadfasdfasdfdsaf

 \bl end{raggedright}
 end{document}

-----------------------------------------------------------------------
```

http://www.usq.edu.au/users/leis/notes/latex/ has good latex
diagram instructions.

times Times, Helvetica, Courier
pslatex same as Times, but uses a specially narrowed Courier. This is preferred
over Times because of the way it handles Courier.
newcent New Century Schoolbook, Avant Garde, Courier
palatino Palatino, Helevetica, Courier
palatcm changes the Roman to Palatino only, but uses CM mathematics

Small Capitals \bl textsc{words to be in small capitals} puts the words in the
brackets in small capitals

\bl textsl{words to be slanted}

http://www.image.ufl.edu/help/latex/fonts.shtml