

Math 235: Calculus Lab

Prof. Doug Hundley

Olin 234

Week 1

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- ▶ A General Goal: Experience with Linux OS, work in groups.

*All of the software in class may be run from your home computer-
More later.*

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Week	Date	Topic	<i>Pts</i>
1	Jan 17/19	HW Set 1 (Intro/Latex)	10
2	Jan 24/26	HW Set 2 (Latex/Maple)	10
3	Jan 31/Feb 2	HW Set 3 (Latex/Maple)	10
4	Feb 7/9	Start Lab 1	15

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Oral Presentation for the last 3 weeks (20% overall)
Currently scheduled for Friday, May 12th.

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- ▶ Modify the Launchpad (to include Terminal, Firefox, Maple, TeX-maker).

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- ▶ You might also look at the operating system for a few minutes:
 - ▶ Dash Home (Button on upper left)
 - ▶ System Settings (Button on upper right)
 - ▶ Ubuntu Software Center
 - ▶ “Ubuntu One” is the cloud.

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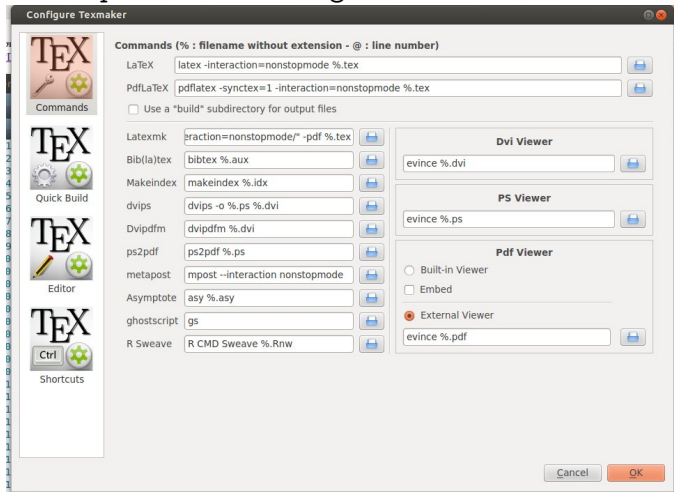
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- ▶ We'll use TeX-Maker as our editor.

First, let's take a look at TeX-maker.

Go to Options -> Configure Texmaker



Configure Texmaker



Commands



Quick Build



Editor



Shortcuts

Quick Build Command

- LaTeX + dvips + View PS
 - LaTeX + View DVI
 - PdfLaTeX + View PDF
 - LaTeX + dvi2pdf + View PDF
 - LaTeX + dvips + ps2pdf + View PDF
 - LaTeX + Asymptote + LaTeX + dvips + View PS
 - PdfLaTeX + Asymptote + PdfLaTeX + View Pdf
 - LatexMk + View PDF
-
- User : (% : filename without extension)

`!x %aux|latex -interaction=nonstopmode %tex|latex -interaction=nonstopmode %tex|xdvi %dvi`



(the commands must be separated by '|')

- Don't launch a new instance of the viewer if the dvi/ps/pdf file is already opened

Cancel

OK



Now we'll put together our first document- Follow along from the handout.

What every LaTeX document needs:

```
\documentclass[12pt]{article}  
\usepackage{graphicx,fullpage}
```

```
\begin{document}
```

(text/typesetting here)

```
\end{document}
```

When saving a LaTeX document, be sure to end the file with `.tex`

From the class website, download the example PDF file, and copy/paste the text into TeXmaker.

We then want to:

1. Save the tex document as `Example.tex`
2. Press the arrow to the LEFT of “Quick Build”.

```
\documentclass[12pt]{article}
\usepackage{graphicx,fullpage}
```

```
\begin{document}
```

You can see from the figure that the function $y = \sin(x)$ is not one to one, but the function $y = \sin(x)$, $-\pi/2 \leq x \leq \pi/2$ is one to one.

Therefore, the inverse exists and is given by:

\$\$

$\sin^{-1}(x) = y \quad \Leftrightarrow$

$\sin(y) = x$ and

$-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$

\$\$

```
\end{document}
```


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Try it:

`\frac{2}{x^2+1}` vs `\displaystyle \frac{2}{x^2+1}`

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`\frac{2}{x^2+1}` vs `\displaystyle \frac{2}{x^2+1}`

gives

$$\frac{2}{x^2+1} \text{ or } \frac{2}{x^2 + 1}$$

Common Notational Issues:

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$$\cos\left(\frac{3x}{2}\right)$$

SOLUTION:

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SOLUTION:

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```
\cos\left(\frac{3x}{2}\right)
```

\$\$

- ▶ Aligning things using an “array”. Here’s an example:

$$f(x) = \begin{cases} f_1(x) & \text{for } x < 1 \\ f_2(x) & \text{for } x \geq 1 \end{cases}$$

\$\$

```
f(x)=\left\{ \begin{array}{ll}
```

```
f_1(x) & \mbox{ for } x<1\\
```

```
f_2(x) & \mbox{ for } x\geq 1
```

```
\end{array}\right.
```

\$\$

Now continue working through the handout.

HOMEWORK:

- ▶ Be sure to finish the handout.
- ▶ Watch the videos; linked from class website.
- ▶ Write a short biography of yourself (see details below).
Upload the tex file and the pdf file to your dropbox before our next class meeting.

Write a short bio of yourself (just 1-2 paragraphs). Include things like where you are from and how much experience in mathematics you've had, and mathematical things that might be of interest.

You can also include hobbies.

Mainly, in this document I would like to see some structural things in LaTeX:

- ▶ Use title, author, date (and `\maketitle`).
- ▶ Include some mathematical notation, both inline and display.
- ▶ Save the tex file as: `bio.tex`.
- ▶ Use TeXmaker to create the appropriate PDF file, and upload both tex and PDF files to your CLEO dropbox before our next class meeting.