

## *Getting started with L<sup>A</sup>T<sub>E</sub>X*

Unless you want to try to convince the editors of *Inventiones Mathematicae* that you ought to be allowed to submit a manuscript written on the backs of paper napkins from the Atlanta Bread Company, you're going to want to learn how to use a powerful piece of mathematical software in order to prettify tremendously the proofs you'll be proving.

That software, my friends, is called L<sup>A</sup>T<sub>E</sub>X.

Though you may not yet have used it much, some of you may know about L<sup>A</sup>T<sub>E</sub>X (or perhaps its older sister, T<sub>E</sub>X), a typesetting language developed a couple of decades back by computer scientist/mathematician Donald Knuth, among others. Even if you're not familiar with the language itself, you're certainly familiar with its output: thousands of mathematicians and other scientists use L<sup>A</sup>T<sub>E</sub>X daily to prepare journal articles, grant proposals, technical reports, text manuscripts, and course materials. If you've had a class with me in the past, you've seen the look of a L<sup>A</sup>T<sub>E</sub>X document before, I'm sure. (This document is written using L<sup>A</sup>T<sub>E</sub>X; does the font look familiar?)

So how is it done?

### **To get started, you will need...**

1. **A text-editor.** This component is a simple one to find, and you can use just about any word processor out there to prepare your documents, though there are more "specialized" tools available, often cheaply or for free, online. For instance, I use the shareware program WinEdt to put together L<sup>A</sup>T<sub>E</sub>X documents in my office, it's got great formatting conventions that make it particularly nice to use for T<sub>E</sub>X and L<sup>A</sup>T<sub>E</sub>X. (Similar to this, and free, is the shareware program TeXMaker.) If you're working on a UNIX platform or a UNIX terminal emulator, you can use a standard text editor like emacs, pico, or [insert shudder here] vi. Though technically you can even use Microsoft's Notepad to do your text editing (seriously!), the advantage of the programs I've mentioned above is that the interface seamlessly with...
2. **A L<sup>A</sup>T<sub>E</sub>X compiler.** Once you've typed up your "raw code," you need a program to convert it into the final document. Lucky for you, such programs are available at no cost and high quality on the internet. The freeware program MikTeX is one of the best compilers available and is free to download for the PC platform. Similar to this is MacTeX, designed, as you might imagine, to run on Macs. These compilers are flexible, powerful, and recognize just about any flavor of T<sub>E</sub>X you can throw into them. Of course, if you're working in UNIX or a Linux terminal emulator, you should have a native L<sup>A</sup>T<sub>E</sub>X compiler built into the operating system. I used the GNU compiler on UNIX for seven years, writing a dozen papers and a textbook on it, and I've never had a problem. The best compilers are simple to figure out and easy to use; you'll be writing like a professor emeritus in no time!

### Sometime before Monday, August 24th, you must...

1. Find a text editor you will feel comfortable working with. I highly recommend TeXMaker, available for free at <http://www.xmlmath.net/texmaker/>.
2. Find a  $\text{\LaTeX}$  compiler you will feel comfortable working with. For PC users I highly recommend MiKTeX, available at <http://miktex.org/>, and for Mac users, you may want to check out MacTeX, available at <http://www.esm.psu.edu/mac-tex/>.
3. Download and install both your compiler and your editor. I've found that it helps to install my compiler (in my case, MiKTeX) first, since then when you load up your text editor for the first time, it configures itself automatically, recognizing the presence of MiKTeX on your hard drive.
4. Play around for a bit! I've placed a couple of helpful handouts on  $\text{\LaTeX}$  on the course website, you might wish to check those out. Please keep in mind that the best way to learn  $\text{\LaTeX}$  is to practice, practice, practice!
5. Use  $\text{\LaTeX}$  to type up your solution to one of the homework problems in the first homework set, just for practice. The second homework set will contain the first problems that *must* be typeset using the software.

If at any time you would like feedback on your work, or you would like me to look over a rough draft of your writing/typesetting, please don't hesitate to ask!