

LaTeX for beginners / Igor Cialenco

TeX is a typesetting system invented by Donald E. Knuth.

Installation under Windows system:

Install MikTeX - <http://www.miktex.org>

MikTeX (pronounced *mick-tech*) is an up-to-date implementation of TeX and related programs for Windows (all current variants) on x86 systems. MikTeX contains LaTeX, AMSTeX and other TeX systems, hence MikTeX is the software that creates the tex files, compiles them, and then finally gives the pdf, ps files.

Download from: <http://www.miktex.org> (**free, open source**)

There are two choices:

- 1) Basic MikTeX. Convenient for quick installation and writing simple math documents. Latter one, if the system is set up properly, all missed packages will be installed on demand and on fly
- 2) Full MikTeX. Requires an Internet connection during the installation, and takes much more space on your hard drive than Basic one. Advantage – you get all packages

After the download is complete, proceed with installation of the MikTeX. The process is similar to installation of any other software under Windows

Having MikTeX installed, you actually can already write math text. However, you will need to use *command line* for compiling, creating pdf etc. This may be painful, especially if you are used to Windows environment with buttons and menus. Hence, you need to install a shell, that will help to “get in touch” with LaTeX.

Install WinEdt - <http://www.winedt.com/>

WinEdt integrates all the tools, needed to develop documents with LaTeX, into just one application. You have the editor to write your LaTeX files, you can start building the output files by just one click of the button. There are many buttons with predefined Math Formulas etc.

Only trial version for free, after which the student version will cost about \$30 (worth to invest)

Alternatively TeXnicCenter - <http://www.toolscenter.org>

Free, open source, almost as powerful as WinEdt.

Getting started with first TEX file:

A blank TeX file and several Tutorials can be downloaded from:

<https://math.iit.edu/~igor/latexSIAM>

General Idea:

- **Open the TeX file** in WinEdt or TeXnicCenter and edit it there using LaTeX commands.
- **Compile the TeX file.** Thus the DVI (or PDF) file will be created.
In WinEdt that will be Accessories>Latex;
In TeXnicCenter that will be Ctrl+F7 (or Built>Current File> Built output)
- **See the output**, i.e. DVI (or PDF, PS) file.

Remarks:

- LaTeX is not a WYSWYG (like Word). You have to use special instructions (commands) to write special symbols. However, you write the plain text in the usual way. You need commands for formulas.
- Any mathematical expression should be written between \$... \$ for inline expressions. For example: **Linear equation is a equation of the form $ax=bx$** . If you want to have a mathematical expression in a separate line just use double dollar sign. Example: **$ax^2+bx+c=0$**
- The backslash symbol \backslash in TeX has special destination, being the most important one. Every command in TeX begins with this symbol. For example, if you want to write $\alpha + \beta$ then in the TeX file you have to write **$\backslash\alpha + \backslash\beta$**
- The multiple blank spaces in TeX are ignored.
- Do not try to format “nicely” in LaTeX. LaTeX is smart, it will do this for you.