
CMPE 220

— PS 1: Introduction to Scientific Documentation —

What is TeX? What is LaTeX?

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- **TeX** is an automated typesetting system, quite useful for typesetting mathematics.^[1]
- **LaTeX**^[2] is also a typesetting system comprising of a set of macros built on top of TeX^[1]. Sort of an extension of TeX.
- **TeX** deals more with the **appearance** whereas **LaTeX** aims to solve the appearance issues automatically and let us concentrate on the **content**.

1. <https://en.wikipedia.org/wiki/Typesetting>
<https://www.latex-project.org/>

AMS Euler

$$\int_0^3 9x^2 + 2x + 4 \, dx = 3x^3 + x^2 + 4x + C \Big|_0^3 = 102$$

$$e^{x+iy} = e^x (\cos y + i \sin y)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Mathematical text typeset using TeX and the AMS Euler font.^[3]

3. https://en.wikipedia.org/wiki/File:AMS_Euler_sample.png

Definitions

- **Languages:** LaTeX, plain TeX ...
- **Distributions:** MiKTeX, TeX Live ... (installable TeX related software)
- **Front Ends:** Emacs, TeXShop ... (editors to create a document file)
- **Packages:** geometry, lm ... (<http://www.ctan.org/>)
- **Engines:** pdfTeX, LuaTeX ... (executable binaries implementing different TeX variants)
- **Online editors**

Getting Started

- What components do you need to begin writing LaTeX source documents in your computer?

Getting Started

- At a minimum, you need
 1. A TeX compiler
 2. Fonts
 3. LaTeX macro set
 4. A text editor
- A TeX distribution includes most of the required components.
 - TeX Live: Linux (can also run on Mac OS and Windows)
 - MiKTeX: Windows
 - MacTeX: Mac OS

Useful Resources

1. <https://www.latex-project.org/>
2. <https://en.wikibooks.org/wiki/LaTeX/>
3. <http://www.ctan.org>
4. <http://docs.miktex.org/manual/>
5. <https://help.ubuntu.com/community/LaTeX>
6. <https://tug.org/mactex/>