

Criteria: software for Mathematics presentation

A \TeX Environment for Student Use

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- ▶ Ability to produce standard mathematical notation
- ▶ Ability to include graphics
 - ▶ “Hand-drawn”
 - ▶ Computer-generated
- ▶ Multi-platform: Linux, Mac OS X, and Windows
- ▶ Used by professional mathematicians
- ▶ Extensive support: web, books, etc.
- ▶ Available anywhere
- ▶ Free, when possible

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All roads lead to \LaTeX !

William of Occam (1285–1349)

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How do we make T_EX accessible?

- ▶ Make it available across campus and elsewhere
- ▶ Use environments and tools which remove “rough edges”
- ▶ Provide templates
- ▶ Provide examples and links to documentation

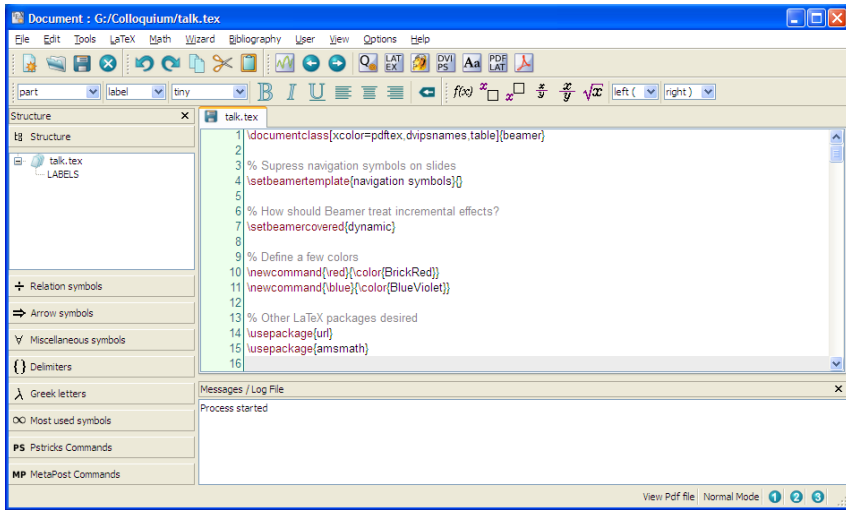
Where does Joe College find information on T_EX?

www.ux1.eiu.edu/~dmbroline/LocalGuide/

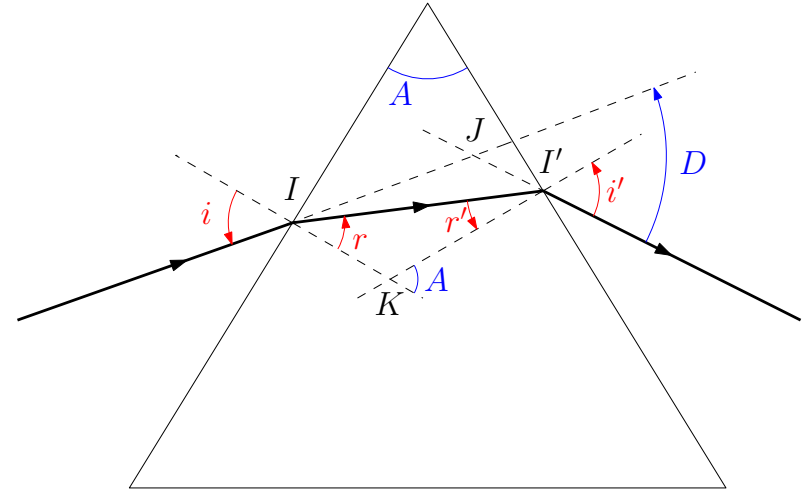
Where does Joanna College find T_EX?

- ▶ In the Old Main PC or Mac laboratories
- ▶ On a personal computer
 - ▶ Install from customized CD
 - ▶ Use customized USBT_EX
- ▶ On any other personal computer
 - ▶ Use customized USBT_EX

Live demonstration: Texmaker

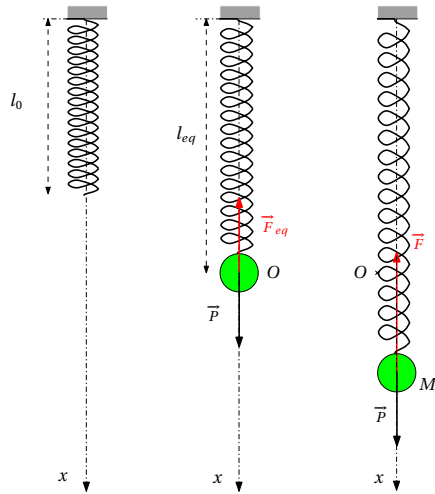


IPE showcase



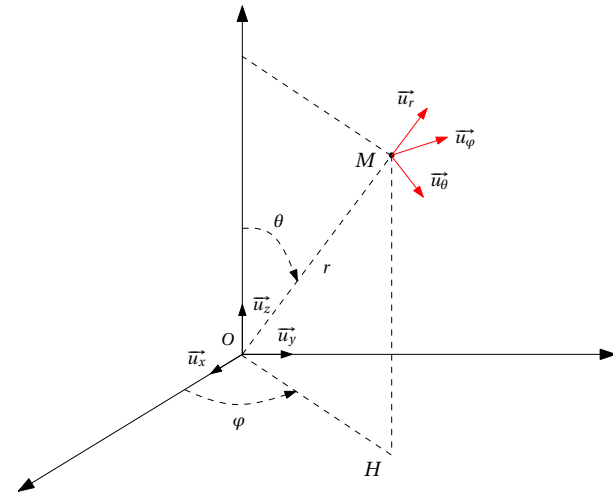
Source: <http://melusine.eu.org/lab/ipe>

IPE showcase



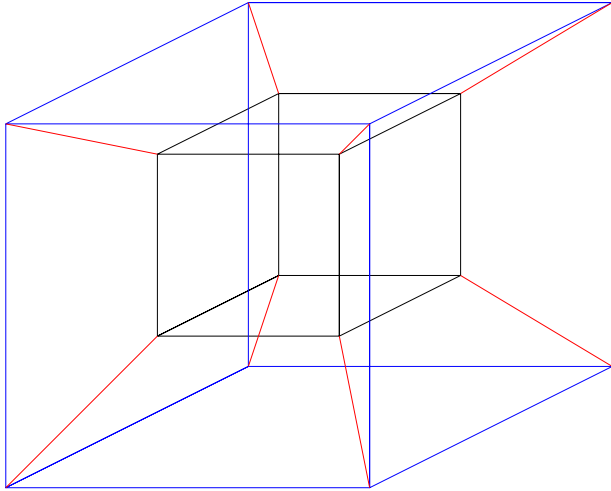
Source: <http://melusine.eu.org/lab/ipe>

IPE showcase



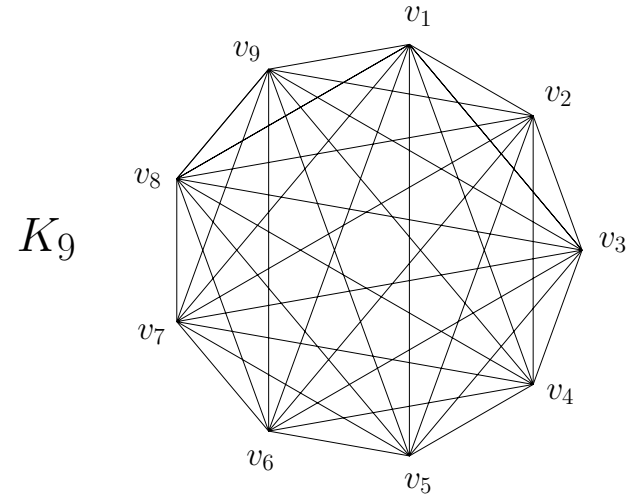
Source: <http://melusine.eu.org/lab/ipe>

IPE showcase



Source: Duane Broline

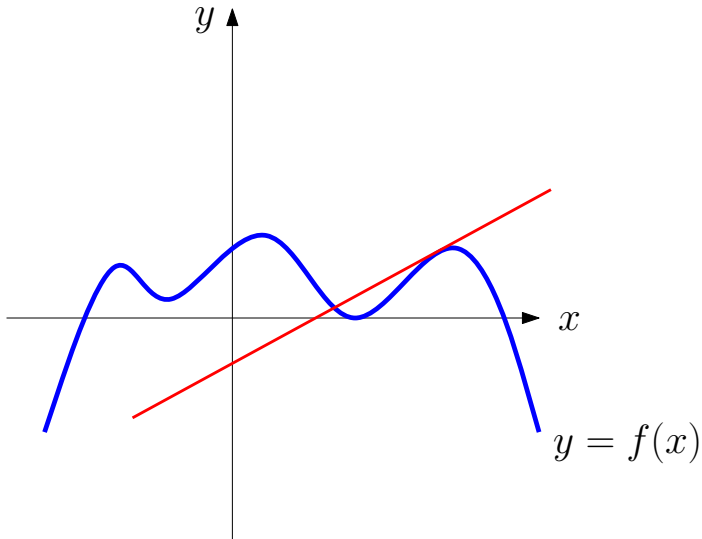
IPE showcase



K_9

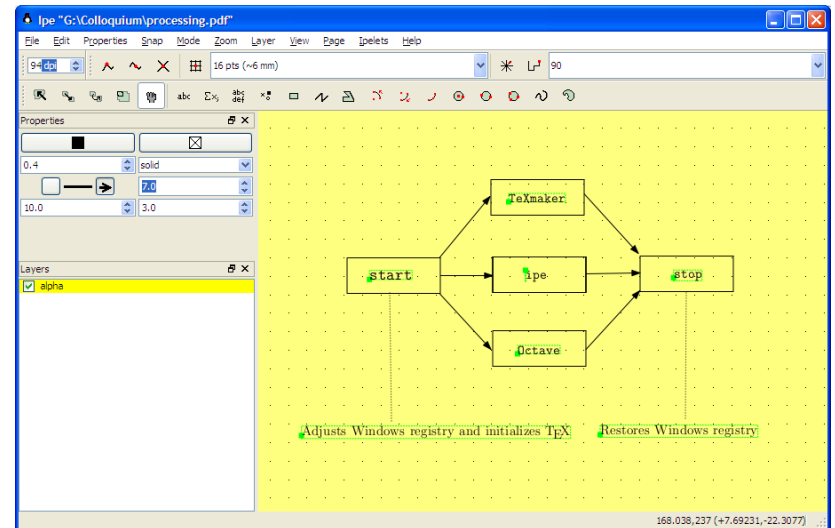
Source: Duane Broline

IPE showcase



Source: Bill Slough

Live demonstration: IPE



About graphics: some common situations

- ▶ Sketch from IPE
- ▶ Function plot
 - ▶ Maple
 - ▶ MATLAB
 - ▶ WinPlot
 - ▶ ...
- ▶ Geometric figure
 - ▶ Geometer's Sketchpad
 - ▶ Cinderella
 - ▶ ...

Including graphics in a \LaTeX document

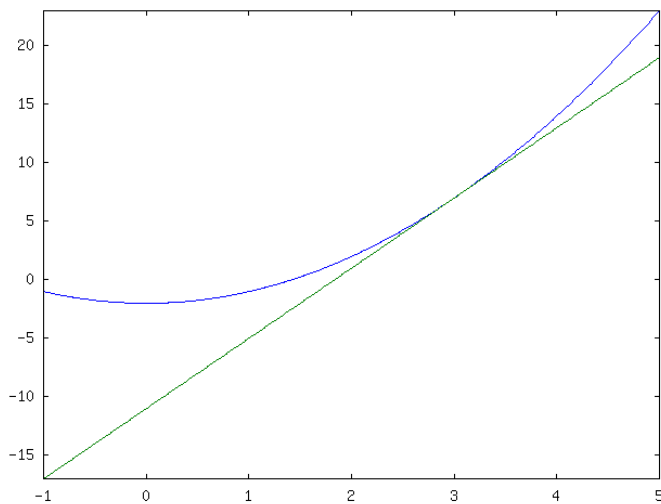
- ▶ Generate the desired graphic, in either PDF or PNG formats

- ▶ Include the graphic:

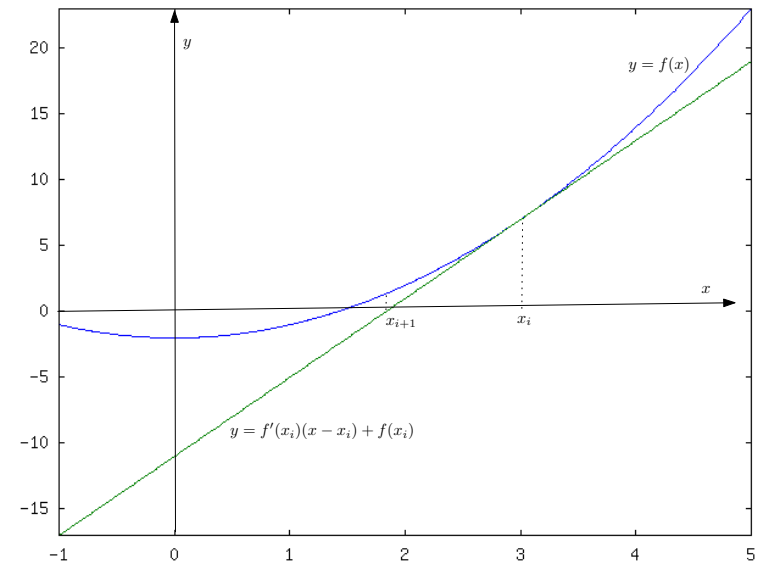
```
\usepackage[pdftex]{graphicx}           % within the preamble
...
\includegraphics[width=2in]{myplot} % at the place the
                                     % graphic is to appear
```

- ▶ Live demonstration...

A graph obtained from Octave



Annotating a graph obtained from Octave



Why a USB stick?

- ▶ Portability: works anywhere on campus or elsewhere
- ▶ Ubiquity: reasonably commonplace
- ▶ Cost: relatively inexpensive (\approx \$20)
- ▶ Capacity: 1–2 Gb typical capacity



Image source: http://en.wikipedia.org/wiki/USB_flash_drive

USBT_EX and friends: portable software applications

- ▶ USB memory stick — not simply for data!
- ▶ Provides a uniform T_EX environment
- ▶ Uses components that run under Linux, Mac OS X, and Windows[†]
- ▶ Very easy to install: download, unzip, save to USB stick

[†]USBT_EX is intended for Windows, although it uses components that run on other systems and have the same “look and feel” everywhere.

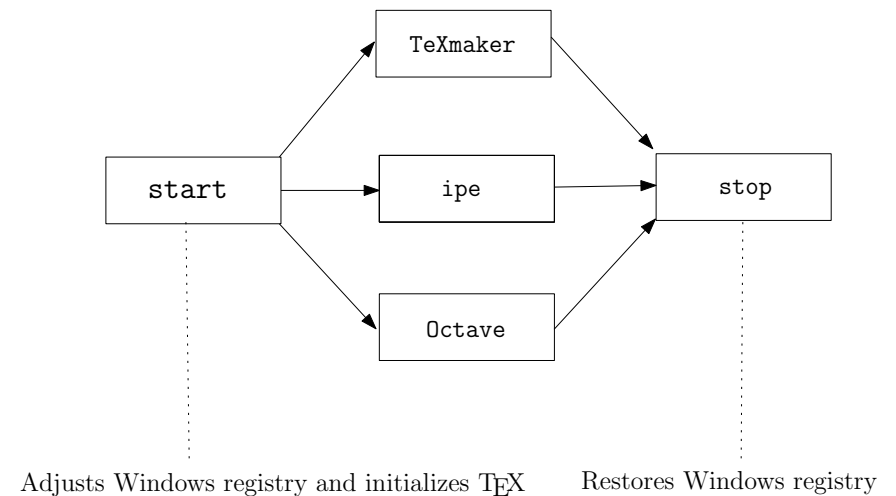
What’s included?

T _E X engine	USBT _E X
L ^A T _E X editor	T _E Xmaker
PDF viewer	Sumatra PDF
Graphics editor	IPE
Spell checker	GNU Aspell
Numerical computation	Octave [†]

We assembled and customized freely available software and made it available to our students

[†]Similar to MATLAB.

Workflow



Individual components:

USB $\text{T}_\text{E}\text{X}$	www.exomatik.net/LaTeX/USBTexEnglish
Texmaker	www.xmlmath.net/texmaker/
Sumatra PDF	code.google.com/p/sumatrapdf/
IPE	tclab.kaist.ac.kr/ipe/
Aspell	aspell.net/
Octave	www.gnu.org/software/octave/

Our packaging, with customizations:

www.ux1.eiu.edu/~dmbroline/LocalGuide/