More with LaTeX: Tools for slides, graphics, bibliographies, and all that

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Outline

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Slide presentations: tool for good or necessary evil?

The good:

- Distributable
- Reusable
- Simple
- More info, less time

The bad:

- Less dynamic
- Go to the talk? I've got the slides!
- Less time, more info

Slides in LaTeX? There's a documentclass for that.

The slides you're viewing now were created with the beamer document class.

The beamer class supports:

- All the usual LaTeX fonts and symbols
- LaTeX label and citation referencing features
- Automatic outlining
- Customizable formatting

Best of all, output is a .pdf file you can display without special software!

Is it hard to use?

No.

The `.tex` file for this presentation is available on Stellar. A useful guide is available at
`web.mit.edu/rsi/www/pdfs/beamer-tutorial.pdf`

If it's easy to make slides, then it's easy to make a good presentation, right?

If only it were so simple.

When preparing a presentation, consider the following:

- Pacing is paramount
- There is no rewind
- Who has the slides?
- Assertion, evidence

The rationals have gaps

- The rationals don't have the least upper bound property.
- Cauchy sequences of rationals need not converge in the rationals.

(This is an example of an assertion-evidence slide.)

Displaying information gradually

Sometimes \pause is especially useful:

For instance, perhaps first you want to introduce

Definition

A sequence is a function $a : \mathbb{N} \to \mathbb{R}$.

And next you want to mention that we often think of sequences as ordered lists of numbers

$$a_1, a_2, a_3, \ldots.$$

For distribution, change the first line of your .tex file to \documentclass[handout]{beamer} to omit overlaid slides.

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An important note

Compile `beamer` presentations with `pdflatex` instead of `latex`.

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Easy + Easy $\neq$ Easy

With LaTeX, it's easy to:

- produce symbolic notation
- include figures with `\includegraphics`.

It's *hard* to:

- label your figures with LaTeX symbols!

One solution:

ipe

Check out http://ipe7.sourceforge.net/

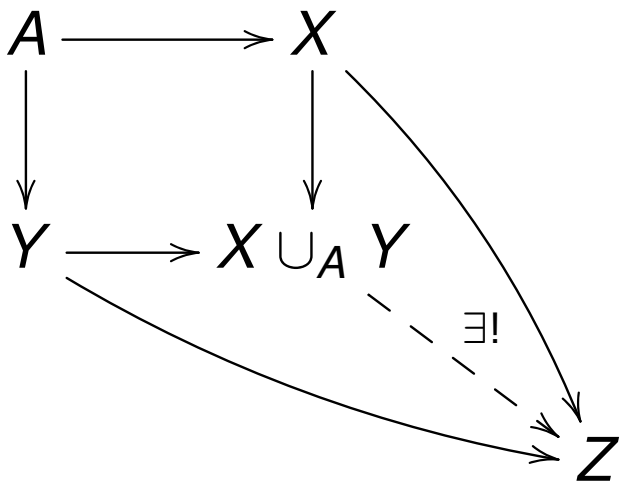
Outline

Other graphics solutions

- PSTricks
  - Write PostScript code inside of LaTeX documents.
- XY-Pic
  - Object-oriented drawing language
  - xymatrix is perhaps the easiest way to produce commutative diagrams
- tikz
  - Vector graphics macros on top of PGF.

The LaTeX Graphics Companion by Goossens, Rahtz, and Mittelbach is an excellent reference.

An xymatrix example



Advanced bibliographies with BibTeX

With BibTeX, you can have

- One database of bibliographic references,
- Many bibliographies.

Pro tip: To automatically generate BibTeX database entries, look up the reference on MathSciNet, select BibTeX from the dropdown menu, copy, and paste!

It's always nice to conclude by saying. . .

Thank you