#### Introduction to LATEX, part II

Jay Pantone

Department of Mathematics University of Florida March 18, 2014





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Document structure

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- Document structure
- Layout

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- Document structure
- Layout
- Math mode

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- Document structure
- Layout
- Math mode
- Commands and arguments

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- Document structure
- Layout
- Math mode
- Commands and arguments
- Tables and arrays

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- Document structure
- Layout
- Math mode
- Commands and arguments
- Tables and arrays
- Images

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- Document structure
- Layout
- Math mode
- Commands and arguments
- Tables and arrays
- Images
- Errors

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- Document structure
- Layout
- Math mode
- Commands and arguments
- Tables and arrays
- Images
- Errors

Everything from last week (including the slides and their source) is on the Graduate Mathematics Association website: gma.math.ufl.edu/latex-seminar/.

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User-defined Commands

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- User-defined Commands
- Article Formatting

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- User-defined Commands
- Article Formatting
- Bibliographies

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- User-defined Commands
- Article Formatting
- Bibliographies
- Drawing Figures (TikZ)

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- User-defined Commands
- Article Formatting
- Bibliographies
- Drawing Figures (TikZ)
- Slides (Beamer)

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#### TYPES OF COMMANDS

Last week we learned about different types of commands.

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#### Types of Commands

Last week we learned about different types of commands.

• Some have no arguments:  $\alpha \implies \alpha$ 

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#### TYPES OF COMMANDS

Last week we learned about different types of commands.

- Some have no arguments:  $|alpha| \Longrightarrow \alpha$
- Some have arguments:  $[\label{eq:some_algoe}] \implies \left| \begin{array}{c} a \\ \overline{b} \end{array} \right|$

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#### Types of Commands

Last week we learned about different types of commands.

- Some have no arguments:  $| alpha | \Longrightarrow \alpha$
- Some have arguments:  $\left| \frac{a}{h} \right|$
- Some have optional arguments:  $|\operatorname{sqrt}[n]{x}| \Longrightarrow | \sqrt[\eta]{x}$



### USER-DEFINED COMMANDS

You can define your own commands (also known as *macros*) in the preamble using the  $\newcommand$  command.



# USER-DEFINED COMMANDS

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Format:

\newcommand{\yourcommandname}{[what it does]}

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# USER-DEFINED COMMANDS

You can define your own commands (also known as *macros*) in the preamble using the  $\newcommand$  command.

Format:

\newcommand{\yourcommandname}{[what it does]}

Stupid example:

\newcommand{\me}{jay}

Now, we can use  $\forall me \implies jay$ .

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#### LESS STUPID EXAMPLE

The symbol  $\smallsetminus$  is created by  $\smallsetminus$ , which is a lot of typing. We need a shortcut.

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#### LESS STUPID EXAMPLE

The symbol  $\smallsetminus$  is created by <code>\smallsetminus</code>, which is a lot of typing. We need a shortcut.

\newcommand{\ssm}{\smallsetminus}

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#### LESS STUPID EXAMPLE

The symbol  $\smallsetminus$  is created by <code>\smallsetminus</code>, which is a lot of typing. We need a shortcut.

$$A \ \mathsf{ssm} \ \mathsf{B} \implies A \smallsetminus B$$

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User-defined commands can take arguments. This command shortens the name of \xrightarrow and adds spacing.

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 $\label{eq:lightarrow} \label{eq:lightarrow} \label{eq:lightarrow$ 

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User-defined commands can take arguments. This command shortens the name of \xrightarrow and adds spacing.

 $\label{eq:linear} \label{linear} \$ 

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 $\label{eq:limit} \label{limit} \label{limi$ 

Let's break the parts down:

• [1] is the number of arguments

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- [1] is the number of arguments
- ▶ {#1} inserts the given argument

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User-defined commands can take arguments. This command shortens the name of  $\xrightarrow$  and adds spacing.

 $\label{eq:linear} \label{linear} \$ 

- [1] is the number of arguments
- ▶ {#1} inserts the given argument
- ► \; adds a small space

$$\Rightarrow \begin{array}{|c|c|} s_n \xrightarrow{n \to \infty} 0 \\ s_n \xrightarrow{n \to \infty} 0 \end{array}$$

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# REALLY USEFUL EXAMPLE

Arrays take a lot of typing.

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# REALLY USEFUL EXAMPLE

Arrays take a lot of typing.

$$\begin{vmatrix} \$ \ left \ (\ begin \{ array \} \{ rr \} \\ 1 & \& -1 \ \ \ \\ 2 & \& 0 \\ \ \ lend \{ array \} \ right ) \$ \end{matrix} \Longrightarrow \begin{pmatrix} 1 & -1 \\ 2 & 0 \end{pmatrix}$$

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Arrays take a lot of typing.

$$\begin{array}{c} \text{(begin{array}{rr})} \\ 1 & \& -1 \\ 2 & \& 0 \\ \text{(end{array}(right))} \end{array} \end{array} \Longrightarrow \left( \begin{array}{c} 1 & -1 \\ 2 & 0 \end{array} \right)$$

Let's make a macro.
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## REALLY USEFUL EXAMPLE

Let's make a macro.

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## REALLY USEFUL EXAMPLE

Let's make a macro.

Now we can make arrays much quicker.

$$\operatorname{\operatorname{Sarr}}_{e} = \left( \begin{array}{c} \pi & e \\ \gamma & 1 \end{array} \right)$$

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formatting a title page

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- formatting a title page
- automatic numbering

Recap	Commands	ARTICLES	BibT <sub>E</sub> X	ΤικΖ	BEAMER	Review
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- formatting a title page
- automatic numbering
- creating a table of contents

Recap	Commands	ARTICLES	BibT <sub>E</sub> X	ΤικΖ	BEAMER	Review
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- formatting a title page
- automatic numbering
- creating a table of contents
- tracking references

Recap	Commands	ARTICLES	BibT <sub>E</sub> X	ΤικΖ	BEAMER	Review
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- formatting a title page
- automatic numbering
- creating a table of contents
- tracking references
- handling footnotes,

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TIkZ						

# TikZ is a (recursive) acronym for the German phrase TikZ ist *kein* Zeichenprogramm

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# TikZ is a (recursive) acronym for the German phrase TikZ ist *kein* Zeichenprogramm

which translates to

TikZ is not a drawing program.

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TIkZ						

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TikZ is not a drawing program.

(Hint: TikZ is a drawing program.)

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## TıkZ

TikZ has a *ton* of extensions that let you draw almost anything.

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## TıkZ

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TikZ has a ton of extensions that let you draw almost anything.

Today we'll look at

basic shapes

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## TıkZ

TikZ has a *ton* of extensions that let you draw almost anything.

- basic shapes
- plots

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TikZ has a *ton* of extensions that let you draw almost anything.

- basic shapes
- plots
- some tricks

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Beamer is a document class for making presentation slides.

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Beamer is a document class for making presentation slides.

It is extremely simple to make basic slides, and it comes with many themes.

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Beamer is a document class for making presentation slides.

It is extremely simple to make basic slides, and it comes with many themes.

For the experts, it is very customizable.

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#### SUMMARY

You can do almost anything with LATEX if you can find the right packages or document classes.

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## SUMMARY

You can do almost anything with LATEX if you can find the right packages or document classes.

Pick a project and just keep trying until it works.

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## SUMMARY

You can do almost anything with LATEX if you can find the right packages or document classes.

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Google!
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## Thanks for coming. Any questions?