

Mathematical Typesetting in \LaTeX

Spoken Tutorial

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://www.sakshat.ac.in>

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Pronunciation of \LaTeX

- ▶ The word \TeX comes from τ , ϵ , χ
- ▶ Pronounce the last letter as ky or ki, not x
- ▶ So, \LaTeX should be pronounced as Latek



Learning Objectives

How to

- ▶ How to get into and leave from the mathematical mode



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- ▶ The role of spaces and how to create them
- ▶ Mathematical symbols
- ▶ `amsmath` package and its use in creating matrices



System Requirements

- ▶ Recording it on Rs. 10,000 laptop
- ▶ Ubuntu 14.04 LTS
- ▶ TeXworks, and \LaTeX
- ▶ TeXworks on Windows or Mac
- ▶ Can use without TeXworks also
- ▶ Other Linux systems are also ok



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- ▶ We shall use it when we do assignments



Summary

In this tutorial we learnt the following:

- ▶ Entering and leaving the mathematical mode
- ▶ Using spaces and creating them
- ▶ Fractions, subscripts and superscripts
- ▶ Defining an argument with braces
- ▶ `amsmath` package to create matrices



Assignments



1. Space

1. We left a space between α and a in the tutorial. Now leave different lengths of space using:

1.1 `\enskip`

1.2 `\quad`

1.3 `\qquad`

How do these spaces compare with one we created in the tutorial?

2. Between α and a , now leave a smaller space with the command `\,` (i.e., slash comma)

2. Fractions

- ▶ We want you to create $\frac{ab}{cd}$. What happens if you give this command `\frac ab cd` without braces? Explain.
- ▶ What does the following command result in: `\frac{ab+1}{cd-1}`
- ▶ Create this fraction: $\frac{a}{b + \frac{1}{c}}$
- ▶ If you use `\dfrac` in the place of `\frac`, what happens? For `\dfrac` to work, you need to use the package `amsmath`

3. Subscripts and Superscripts

- ▶ We want you to create x_{ab} . Will the following command work? `x_ab`. Explain.

- ▶ Reproduce this command:

`\int_{-\infty}^{\pi/2} x dx`

- ▶ What do the commands `\int` and `\pi` do?
- ▶ Does it make sense to use `\frac` in the above?

4. Matrices

- ▶ We have used the following commands to build matrices: `\matrix`, `\bmatrix`
- ▶ Try instead the following matrix commands: `\pmatrix`, `\vmatrix`, `\Vmatrix`
- ▶ Remember to use the package `amsmath`

5. Various symbols

- ▶ **Try the symbols on page 12 and 13 of the file `chap11-prn.pdf` that has been distributed with this tutorial.**

6. Package `amssymb`

- ▶ Use the package `amssymb`
- ▶ Try the commands on pages 14 to 16 of the file `chap11-prn.pdf` that has been distributed with this tutorial.

7. More of TUG India Document

- ▶ Reproduce as many commands as possible from `chap11-prn.pdf`
- ▶ This file has been distributed with this tutorial.
- ▶ You may copy-paste, directly, from pdf.
- ▶ If a command does not work, see if a package has to be used.

8. Paragraph Indent

- ▶ We used a command that removes paragraph indents
- ▶ Delete this command and repeat this tutorial
- ▶ What does this command do?
- ▶ Try this command in other \LaTeX spoken tutorials also

About the Spoken Tutorial Project

About the Spoken Tutorial Project

- ▶ **Watch the video available at**
http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- ▶ **It summarises the Spoken Tutorial project**
- ▶ **If you do not have good bandwidth, you can download and watch it**

Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test

For more details, please write to
contact@spoken-tutorial.org

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- ▶ Someone from the Spoken Tutorial forum will answer them.

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- ▶ With less clutter, we can use these discussions as instructional material

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Acknowledgements

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- ▶ More information on this mission is available at <http://spoken-tutorial.org/NMEICT-Intro>

Thanks!