

An Introduction to L^AT_EX as an Alternative to Office Software

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Outline

- 1 A Brief Introduction
- 2 An Overview of Philosophies
- 3 A Little Bit of (Gratuitous) Math
- 4 Examples
- 5 Questions

A Brief Introduction

- \TeX (Donald Knuth, 1978)
 - To allow everyone to create beautiful books
 - To provide a system that would produce the same results on any computer, at any point in time.

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- LilyPond (Han-Wen Nienhuys, Jan Nieuwenhuizen, 1996)
 - Produce beautiful music

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An Overview of Philosophies

- WYSIWYG (Word, OpenOffice, T_EX)

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(WYSIAYG)

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(WYSIAYG)
- WYSIWYM (L^AT_EX, HTML & CSS)

An Overview of Philosophies

- WYSIWYG (Word, OpenOffice, $\text{T}_{\text{E}}\text{X}$)
(WYSIAYG)
- WYSIWYM ($\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$, HTML & CSS)
(But the LyX document processor permits a certain degree
of WYSIWYG using $\text{L}_{\text{A}}\text{T}_{\text{E}}\text{X}$...)

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A Little Bit of (Gratuitous) Math

Theorem

Let u be a variable in $\mathbb{R}[x]$, and a be a constant in \mathbb{R} . Then

$$\int \sqrt{u^2 - a^2} du = \frac{u}{2} \sqrt{u^2 - a^2} - \frac{a^2}{2} \ln \left| u + \sqrt{u^2 - a^2} \right| + C.$$

A Little Bit of (Gratuitous) Math

Theorem

Let (R, \mathfrak{m}) be a Noetherian local ring with unity, and let $I \subset R$ be a grade 3 Gorenstein ideal with no embedded primes, where I is given by $\text{Pf}_{g-1}(\xi)$ for some alternating map $\xi : G^ \rightarrow G$, and some free module G over R of odd rank g . Suppose I satisfies*

$$\text{grade Pf}_{g-2t+1}(\xi) \geq 2t + 2 \quad (1)$$

for all t such that $2 \leq t \leq k$. Then $I^{(t)} = I^t$ for all t such that $1 \leq t \leq 2k$.

Moreover, if $k \geq (g - 1)/2$, then $I^{(t)} = I^t$ for all $t \geq 1$.

A Little Bit of (Gratuitous) Math

(And some gratuitous music) [3]

Excerpt from *fibonacci*

Patrick McCarty

Slow and steady ($\text{♩} = 60$)

57

References

- [1] Leslie Lamport, *LaTeX User's Guide and Reference Manual: A Document Preparation System*, 1994, 1987.
- [2] Michel Goossens, Frank Mittelbach, and Alexander Samarin, *The LaTeX Companion*, 1994.
- [3] *LilyPond*, <https://en.m.wikipedia.org/wiki/LilyPond>.
- [4] *Laziness Impatience Hubris*,
<http://c2.com/cgi/wiki?LazinessImpatienceHubris>.
- [5] *The TeX Users Group*, <http://tug.org>.
- [6] *LaTeX (home website)*, <https://latex-project.org>.
- [7] *LyX*, <https://www.lyx.org>.
- [8] *LilyPond*, <http://lilypond.org>.
- [9] Daniel M. Jones, *User's Guide to the amsrefs Package*, January 16, 2013. PDF.

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Examples

A Few Examples

- letter
- résumé
- presentation (with AMS References)

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Questions

Any Questions?