

Una Introducción al $\text{\LaTeX}$

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¹Adaptado de: *Lim Lian Tze, Martins Bruveris.*

Contenido

- 1 ¿Qué son $\text{\TeX}$, $\text{\LaTeX}$, y sus amigos?
- 2 Tipos de Documentos
- 3 Matemáticas y otras cosas
- 4 Tipografía

Contenido

1 ¿Qué son $\text{\TeX}$, $\text{\LaTeX}$, y sus amigos?

2 Tipos de Documentos

3 Matemáticas y otras cosas

4 Tipografía

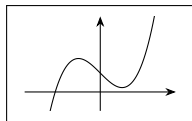
El proyecto de Fin de Semestre

tiene alrededor de 50–70 páginas y contiene

■ Ecuaciones Matemáticas

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$$

■ Gráficas



■ Tablas

x	0	1	2
y	0.5	0.5	7.5

■ Códigos

```
if x > 0  
    y = sqrt(x);  
end
```

■ Referencias and a bibliografía

Vea [1, Theorem 1.2.6] para una demostración.

[1] S. Abbott. *Understanding Analysis*. Undergraduate Texts in Mathematics. Springer, New York, 2015.

¿Qué son T_EX, L^AT_EX, y sus amigos?

T_EX

- Del Griego τεχ.
- Abreviatura de τεχνη, que quiere decir *arte* o *artesanía*.
- ASCII TeX, /tex/, /tek/.
- Un **sistema de tipografía computarizado** creado por Donald Knuth para ‘la creación de libros hermosos’. Primer lanzamiento 1978. (Hace 40 años!)

L^AT_EX

- Abreviación de ‘Lamport-T_EX’.
- ASCII LaTeX, /lertex/, /lertek/, /'la:tex/, /'la:tek/.
- Un **sistema de preparación de documentos** de Leslie Lamport. Primer lanzamiento 1985.

Amigos

- BibT_EX, Biber, MakeIndex, ...
- http://www.ctan.org/what_is_tex.html



Donald Knuth (1938–)

- Científico informático estadounidense, matemático y profesor emérito en la Universidad de Stanford
- Autor del trabajo de varios volúmenes *The Art of Computer Programming*
- “Padre del análisis de algoritmos”

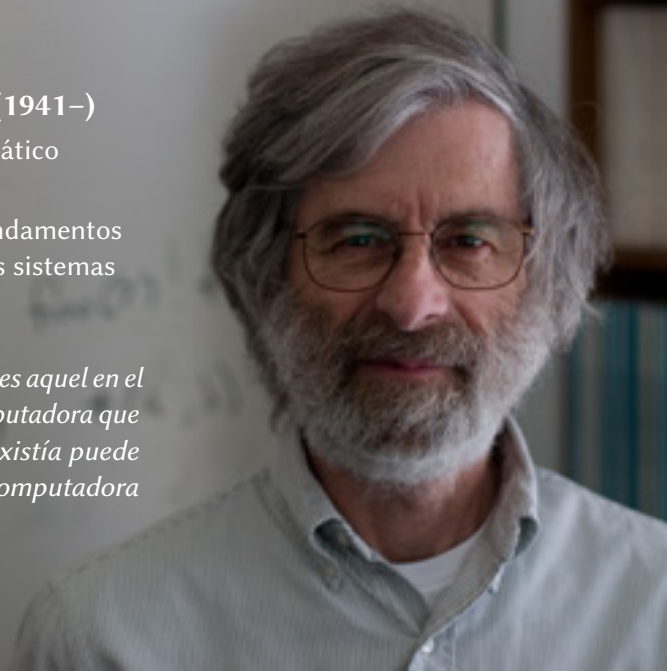
“La ciencia es lo que entendemos lo suficientemente bien como para explicarlo a una computadora. Arte es todo lo demás que hacemos.”

“Si optimizas todo, siempre serás infeliz.”

Leslie Lamport (1941–)

- Científico informático estadounidense
- Estableció los fundamentos de la teoría de los sistemas distribuidos

“Un sistema distribuido es aquel en el que el fallo de una computadora que ni siquiera sabía que existía puede hacer que tu propia computadora quede inutilizable.”





The quick brown fox jumps over the lazy
dog and reads as it is together with Her-
manson's the most famous list of the
preserved of typographic

Gardner

Composición tipográfica y procesamiento de textos

Peras y manzanas

Procesadores de palabras

Word, Google Docs, LibreOffice

- WYSIWYG “What you see is what you get.”
- El contenido y el diseño se generan al mismo tiempo.
- Los ajustes de estilo local son más fáciles de hacer.

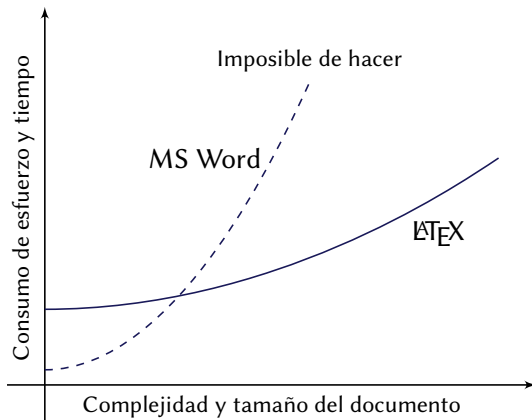
Software Tipográfico

LaTeX, InDesign, Scribus

- Separación de contenido y presentación.
- El diseño puede optimizarse globalmente.
- Es más fácil lograr un estilo uniforme.

tipografía *f.* La actividad de organizar texto e imágenes en la página al preparar un libro, periódico, etc. para imprimir.
(Cambridge English Dictionary)

Escalabilidad



Escalabilidad de $\text{\LaTeX}$ y Microsoft Word como función de la complejidad y tamaño del documento.

Redibujado del original de Marko Pinteric original ([link](#)).

Ejemplo archivo .tex

```
\documentclass[a4paper,11pt]{article}
\author{Martins Bruveris}
\title{An Introductory Paper}
\date{\today}
\usepackage[english]{babel}

\begin{document}
\maketitle
\tableofcontents

\begin{abstract}
This paper introduces\ldots
\end{abstract}

\section{Introduction}
We consider\ldots

\section{State of the Art}
We look at\ldots

\subsection{Document Formats}
There are many\ldots
\end{document}
```

pdflatex

An Introductory Paper

Martins Bruveris

February 5, 2017

Contents

1	Introduction	1
2	State of the Art	1
2.1	Document Formats	1

Abstract

This paper introduces...

1 Introduction

We consider...

2 State of the Art

We look at...

2.1 Document Formats

There are many...

¿Dónde lo consigo?

En línea ShareLaTeX (www.sharelatex.com)
Overleaf (www.overleaf.com)

Windows MikTeX, T_EXLive

Linux T_EXLive

Mac OS X MacTeX (based on T_EXLive)

Editores TeXmaker, TeXworks, TeXstudio, emacs
(Mac OS X) TeXShop, WinEdt, BBEdit, Alpha

L^AT_EX Packages Use MikTeX or T_EXLive's package manager

Documentación (Online) <http://texdoc.net/pkg/<packagename>>
(T_EXLive) \$ texdoc <package name>
(MikTeX) \$ mthelp <package name>

¿Dónde consigo ayuda?

En línea Buscar en internet

TeX Stack Exchange (<http://tex.stackexchange.com>)

The L^AT_EX Wikibook (<http://en.wikibooks.org/wiki/latex>)

Libros George Graetzer, *Practical L^AT_EX*. Springer, 2014.

Helmut Kopka, Patric W. Daley, *Guide to L^AT_EX*.

Fourth Edition. Addison-Wesley, 2004.

Otros L^AT_EX Cheat Sheet ([Link](#))

The Not So Short Introduction to L^AT_EX 2_ε ([Link](#))

The ShareLaTeX Documentation ([Link](#))

Overleaf L^AT_EX Tutorial ([Link](#))

¿Por qué?

From http://www.ctan.org/what_is_tex.html

Calidad de Producción

- Documentos de calidad profesional.
- Sabe de tipografía.

Libertad

- Es gratis.
- Es portable.

Ingeniería Superior

- Es rápido.
- Es estable.
- Es extendible.
- Texto de entrada simple.
- Variedad de producto.

Popularidad

- Es el estándar en la academia y ciencia.

Contenido

1 ¿Qué son $\text{\TeX}$, $\text{\LaTeX}$, y sus amigos?

2 Tipos de Documentos

3 Matemáticas y otras cosas

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Article – El Documento Básico

```
\documentclass{article}  
\author{...}  
\title{...}  
  
\begin{document}  
\maketitle  
\section{...}  
  
...  
  
\subsection{...}  
\end{document}
```

A Wonderful Read

A. Dumas

2d June 2011

1 Heading on level 1 (section)

Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If I read this text, you will get an information. Really? Is there an information? Is there a difference between this text and some content like (famous) physics. Right – None at all! A third one: here this gives you information about the world and here, here the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match the language.

1.1 Heading on level 2 (subsection)

Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If I read this text, you will get an information. Really? Is there an information? Is there a difference between this text and some content like (famous) physics. Right – None at all! A third one: here this gives you information about the world and here, here the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match the language.

1.1.1 Heading on level 3 (subsubsection)

Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If I read this text, you will get an information. Really? Is there an information? Is there a difference between this text and some content like (famous) physics. Right – None at all!

1

A third one: here this gives you information about the world and here, here the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match the language.

Heading on level 4 (paragraph) Hello, here is some text without a meaning. This text should show how a printed text will look like at this place. If I read this text, you will get an information. Really? Is there an information? Is there a difference between this text and some content like (famous) physics. Right – None at all! A third one: here this gives you information about the world and here, here the letters are written and the impression of the look. This text should contain all letters of the alphabet and it should be written in the original language. There is no need for a special content, but the length of words should match the language.

2 Lists

2.1 Example for list (listitem)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list

2.1.1 Example for list (PDescription)

- First item in a list
 - First item in a list
 - Second item in a list
- Second item in a list
 - Third item in a list
- Third item in a list

2

2.2 Example for list (comment)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

2.2.1 Example for list (PComment)

1. First item in a list
 - a) First item in a list
 - b) First item in a list
 - c) Second item in a list
 - d) Second item in a list
2. Second item in a list

2.3 Example for list (description)

First item in a list

Second item in a list

Third item in a list

Fourth item in a list

Fifth item in a list

First item in a list

First item in a list

First item in a list

3

Second item in a list
Second item in a list
Second item in a list
Second item in a list

4

Algunas características de L^AT_EX

- Generación automática de etiquetas de referencias cruzadas:

```
\section{Introduction}\label{sec:intro}  
... We saw in section \ref{sec:intro}...
```

- Generación automática de listas:

```
\tableofcontents, \listoffigures, \listoftables
```

- Generación automática de bibliografías e índices:

```
\cite{Knuth:1976}...\bibliography{references.bib}  
...the Linux kernel\index{Linux!kernel}... \printindex
```

- PDF totalmente hipervinculado con marcadores:

```
\usepackage{hyperref}
```

- Inclusión de páginas seleccionadas de otros PDFs
(insertando a la vez nuevos encabezamientos y pie!)

```
\usepackage{pdfpages}
```

```
\includepdf[pages={1,3-5,8},pagecommand=\thispagestyle{plain}]{file.pdf}
```

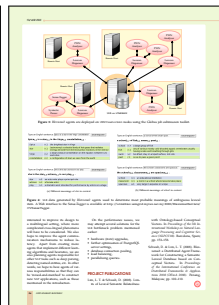
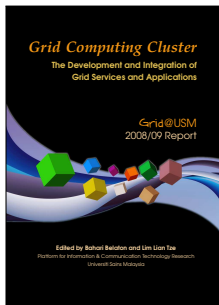
- Rápido cambio de lenguaje con babel

Una plantilla para una tesis universitaria.

Year of Submission: 2016

Documentos altamente configurables

- Títulos seccionales
- Encabezados y pies de página cambiantes
- Buenas opciones de tipos (“fonts”), color e ilustración



Diapositivas de presentación “slides”

- Esta presentación fue hecha con $\text{\LaTeX}$.
- Varias posibilidades de “documentclasses”: powerdot, **beamer**

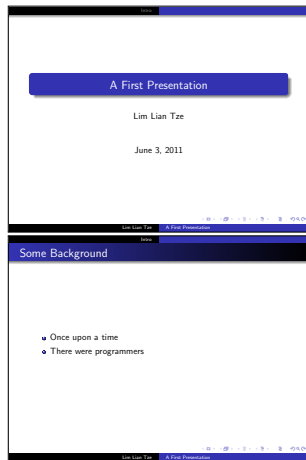
```
\documentclass{beamer}
\usetheme{Warsaw}

\author ...

\begin{document}
\titleframe

\section{Intro}

\begin{frame}
\frametitle{Some Background}
...
\end{frame}
\end{document}
```



"Posters" de gran tamaño

- Muchas alternativas:
sciposter, flowfram, beamerposter, tikzposter

```
\documentclass{beamer}
\usepackage[orientation=portrait,
  ↳ size=a0]{beamerposter}
\usetheme{...}
\author ... % Meta-information

\begin{document}
\begin{frame}
... % Poster contents goes here
\end{frame}
\end{document}
```

Low-Cost Construction of a Multilingual Lexicon from Bilingual Lists

Introduction

- Bilingual lists are good resources for building multilingual lexicons, but heterogeneous structures
- Lowest common denominator: list of source language item → target language item(s)
- Proposal: Multilingual lexicon construction using only simple bilingual lists

One-to-one Inverse Consultation [1]

- Generates a bilingual lexicon for new language pair from existing bilingual lists
- JP-EN, EN-MS, MS-EN lexicons ⇒ JP-MS

Merging Translation Triples into Sets

(Example: Malay-English-Chinese)

Retain OTIC 'middle' language links

For each 'head' language L_1 , discard triples with score $< \alpha X$ or score $< \beta X$, where $X = \max$ score of all triples containing that L_1

F_1 and Rand Index of Selected Translation Sets

Evaluating accuracy of sets with polysemous 'middle' language members, e.g. 翻译 (translation)

Test word	Rand Index	F_1	Best accuracy when
翻译	0.417	0.417	0.500
翻译	0.818	0.927	0.800
翻译	0.821	1.000	0.900
翻译	0.799	0.818	0.728

Discussion and Conclusion

- Low threshold (α, β) more coverage, low precision
- High threshold: good precision; low coverage
- $\alpha = 0.4, \beta = 0.2$ gives good trade-off between coverage, precision and recall
- Results are encouraging for each simple input data!
- Future plans: integrate lexicon into an MT system with WSD

References

[1] F. Band and K. Ogura, "Combining linguistic resources to create a machine-translatable Japanese-Malay dictionary," in: *Language Resources and Evaluation* 32 (2008), pp. 157-166.

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Faculty of Information Technology, Multimedia University, Malaysia



```
\documentclass[foldmark,a4paper]
{leaflet}
\author ... % Meta-information

\begin{document}
\maketitle
\section ...
... % Leaflet contents
\end{document}
```

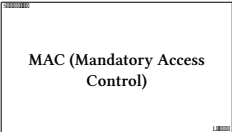
[illegible]

Tarjetas Flash

```
\documentclass[avery5388,frame]
{flashcards}
\cardfrontstyle{headings}
\cardfrontfoot{Linux}

\begin{document}
\begin{flashcard}[Security]
{Certificate}
...
\end{flashcard}

\begin{flashcard}[Security]
{MAC ...}
...
\end{flashcard}
\end{document}
```

	A digital representation of information that identifies you and is issued by Cas, which are often a trusted third party (TTP).
	Access to an object is restricted based on the sensitivity of the object (defined by the label that is assigned), and granted through authorization (Clearance) to access that level of data.

Contenido

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Equation (1) relates the golden ratio and the Fibonacci series. Recall that the golden ratio is $\varphi = \frac{1}{2}(1 + \sqrt{5})$.

$$\varphi = 1 + \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{F_n F_{n+1}} \quad (1)$$

Equation `\eqref{eq:gratio}` relates the golden ratio and the Fibonacci series. Recall that the golden ratio is `\varphi = \frac{1}{2} (1 + \sqrt{5})`.

```
\begin{equation}\label{eq:gratio}
\varphi = 1 + \sum_{n=1}^{\infty}
\frac{ (-1)^{n+1} }{ F_n F_{n+1} }
\end{equation}
```

El paquete “Listings”

```
\usepackage{listings,xcolor}
...
\begin{lstlisting}[language=matlab,
basicstyle=\ttfamily,
keywordstyle=\bfseries\color{red},
commentstyle=\sffamily\color{green},
stringstyle=\rmfamily\color{orange}]
disp('Hello World');

% Calculate golden ratio
F = zeros(10, 1);
F(1:2) = [1, 1];
phi = 1; % Initial value

for j=1:8
    F(j+2) = F(j+1) + F(j);
    phi = phi + (-1)^(j+1) ...
        / (F(j+1) * F(j));
end
\end{lstlisting}
```

```
disp('Hello World');
```

```
% Calculate golden ratio
```

```
F = zeros(10, 1);
```

```
F(1:2) = [1, 1];
```

```
phi = 1; % Initial value
```

```
for j=1:8
```

```
    F(j+2) = F(j+1) + F(j);
```

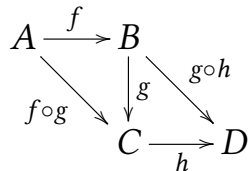
```
    phi = phi + (-1)^(j+1) ...
        / (F(j+1) * F(j));
```

```
end
```

Gráficas y diagramas

```
\usepackage[all]{xy}
```

```
\[  
  \xymatrix{  
    A \ar[r]^f \ar[dr]_{f \circ g} & & B \ar[d]_g \ar[dr]^{g \circ h} \\  
    & C \ar[r]_h & D  
  }  
\]
```

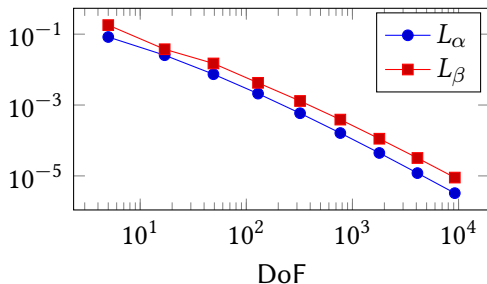


Tablas

Year ending Mar 31	2016	2015	2014
Revenue	14580.20	11900.40	8290.30
Cost of sales	6740.20	5650.10	4524.20
<i>Gross profit</i>	7840.00	6250.30	3766.10

```
\usepackage{booktabs}
...
\begin{tabular}{lrrr} \toprule
Year ending Mar 31 & 2016 & 2015 & 2014 \\ \midrule
Revenue & 14580.20 & 11900.40 & 8290.30 \\
Cost of sales & 6740.20 & 5650.10 & 4524.20 \\ \cmidrule(r){2-4}
\emph{Gross profit} & 7840.00 & 6250.30 & 3766.10 \\ \bottomrule
\end{tabular}
```

Diagramas de gráficas

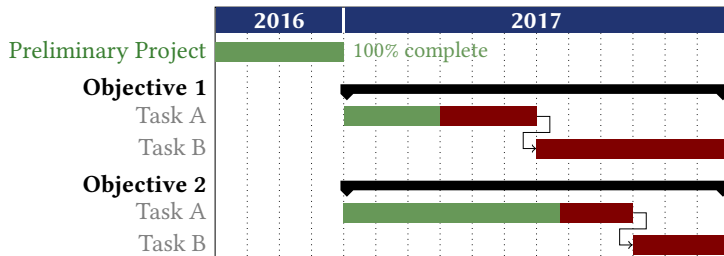


Contenido del datafile.dat

```
dof La Lb
5 8.31e-02 1.80e-01
17 2.546e-02 3.75e-02
49 7.407e-03 1.49e-02
129 2.10e-03 4.23e-03
321 5.87e-04 1.30e-03
769 1.62e-04 3.88e-04
1793 4.44e-05 1.12e-04
4097 1.20e-05 3.20e-05
9217 3.26e-06 8.97e-06
```

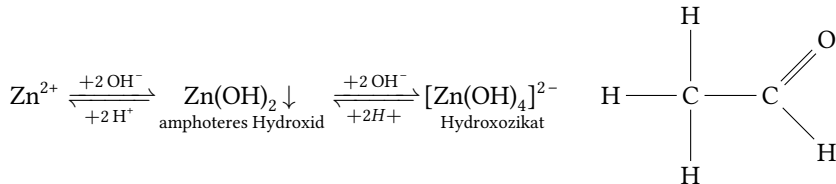
```
\usepackage{pgfplots}
...
\begin{tikzpicture}
\begin{loglogaxis}[xlabel=DoF]
\addplot table[x=dof,y=La]{datafile.dat}; \addlegendentry{$L_\alpha$};
\addplot table[x=dof,y=Lb]{datafile.dat}; \addlegendentry{$L_\beta$};
\end{loglogaxis}
\end{tikzpicture}
```

Diagramas de Gantt



```
\usepackage{pgfgantt}
...
\begin{ganttchart}[...settings...]{1}{16}
\gantttitle{2016}{4} \gantttitle{2017}{12} \\
\ganttbar[progress=100]{Preliminary Project}{1}{4} \\
\ganttgroup{Objective 1}{5}{16} \\
\ganttbar[progress=50, name=T1A]{Task A}{5}{10} \\
\ganttlinkedbar[progress=0]{Task B}{11}{16} \\
...
\end{ganttchart}
```

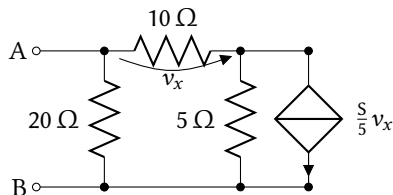
Ecuaciones químicas y moléculas



```
\usepackage[version=3]{mhchem}    % sufficient for chemical equations
\usepackage{chemfig}              % for 2-D molecule drawings
...
\ce{Zn^2+ <=>[\ce{+ 2OH-}][\ce{+ 2H+}]}
$\underset{\text{amphoterer Hydroxid}}{\ce{Zn(OH)2 v}}$
<=> C[+2OH-][+ 2H+]
$\underset{\text{Hydroxozikat}}{\ce{[Zn(OH)4]^2-}}$ }

\chemfig{H-C(-[2]H)(-[6]H)-C(-[7]H)=[1]O}
```

Circuitos y unidades SI



- $3.45 \times 10^4 \text{ V}^2 \text{ lm}^3 \text{ F}^{-1}$
- 40 km/h, 85 km/h and 103 km/h

```
\usepackage{siunitx}
\usepackage[siunitx]{circuitikz}
...
\begin{circuitikz}
\draw (0,0) node[anchor=east] {B}
  to[short, o-] (1,0)   to[R=20<\ohm>, *-] (1,2)
  to[R=10<\ohm>, v=$v_x$] (3,2) -- (4,2)
  to[ cI=$\frac{\si{5}}{\si{5}} v_x$, *-] (4,0) -- (3,0)
  to[R=5<\ohm>, *-] (3,2)
  (3,0) -- (1,0)   (1,2) to[short, -o] (0,2) node[anchor=east]{A}
;\end{circuitikz}

\SI{3.45d4}{\square\volt\cubic\lumen\per\farad}
\SIlist[per-mode=symbol]{40;85;103}{\kilo\metre\per\hour}
```


Códigos de barra

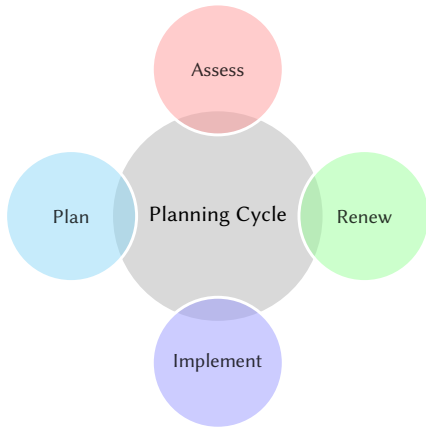


ISBN 978-3-86541-114-3

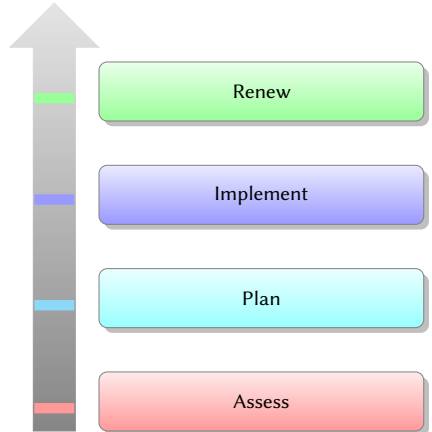


```
\usepackage{auto-pst-pdf} % Needed if running pdflatex; must use option -shell-escape
\usepackage{pstricks,pst-barcode}
...
\begin{pspicture}
\psbarcode{MECARD:N:Malaysia Open Source Conference...}{eclevel=L}{qrcode}
\psbarcode{9781860742712}{includetext guardwhitespace}{ean13}
\psbarcode{978-3-86541-114}{includetext guardwhitespace}{isbn}
\psbarcode{LE28HS9Z}{includetext}{royalmail}
\psbarcode{^453^178^121^239}{columns=2 rows=10}{pdf417}
\end{pspicture}
```

'Smart Diagrams'

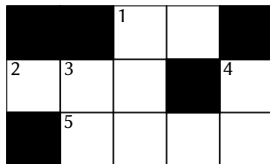


```
\usepackage{smartdiagram}  
\smartdiagram[bubble diagram]{  
  Planning Cycle,Assess,Plan,  
  Implement,Renew}
```



```
\usepackage{smartdiagram}  
\smartdiagram  
  [priority descriptive diagram]{  
    Assess,Plan,Implement,Renew}
```

Crucigramas



Across: 1 unit of measure
2 * 5 sectioning unit

Down: 1 η 3 unit of
measure 4 nonproportional
font

```
\usepackage{cwpuzzle}
...
\begin{Puzzle}{5}{3}
|*|*| [1]E|X|*|.
|[2]A|[3]S|T|*|[4]T|.
|*|[5]P|A|R|T|.
\end{Puzzle}
\begin{PuzzleClues}{
\textbf{Across:} }
\Clue{1}{EX}{unit of measure}
\Clue{2}{AST}{\(\ast\)}
\Clue{5}{PART}{sectioning unit}
\end{PuzzleClues}
\begin{PuzzleClues}{
\textbf{Down:} }
\Clue{1}{ETA}{\(\eta\)}
\Clue{3}{SP}{unit of measure}
\Clue{4}{TT}{nonproportional font}
\end{PuzzleClues}
```

Libros de música y acompañamiento con guitarra



C



G



Am



F

Country road, take me home, to the place I belong.



C



G



F



C

West Virginia, mountain momma, take me home, country road.

```
\usepackage{gchords,guitar}
...
\begin{guitar}
\newcommand{\CMaj}{\chord{t}{n,p3,p2,n,p1,n}{C}}
\newcommand{\Amin}{}
Country [\CMaj]road, take me [\GMaj]home, ...
\end{guitar}
```

Contenido

1 ¿Qué son $\text{\TeX}$, $\text{\LaTeX}$, y sus amigos?

2 Tipos de Documentos

3 Matemáticas y otras cosas

4 Tipografía

¿De qué se trata la tipografía?

Tu proyecto de fin de semestre consistirá de varios elementos:

- El contenido matemático y el trabajo que has hecho.
- Las palabras y oraciones que utilizas para describir el trabajo.
- La forma en que se presentan las palabras y las gráficas en la página.

tipografía *f.* El arte y la técnica de organizar el tipo para que el lenguaje escrito sea legible y atractivo cuando es presentado.

(Wikipedia)

¿Por qué es importante la tipografía?

La tipografía es importante porque ayuda a conservar el recurso más valioso que uno tiene como escritor—la atención del lector.

La atención es el regalo del lector para usted. Ese regalo es valioso. Es finito. Y si no eres un administrador respetuoso de ese regalo, será revocado.

(Matthew Butterick, *Tipografía para abogados*)

Texto en **Bold** e *Itálicas*

Within a larger body of text, a piece in *italics* does not stand out much; instead it signifies a context difference only *while* the text is being read. By contrast, a single word in *boldface* attracts the human eyeball and is therefore recommended for keywords the reader might be *looking* for.

Within a larger body of text, a piece in **italics** does not stand out much; instead it signifies a context difference only **while** the text is being read. By contrast, a single word in **boldface** attracts the human eyeball and is therefore recommended for keywords the reader might be **looking** for.

Utilización de **Bold** e *Itálicas*

1.4 Lipschitz structures and smooth structures

25

Proof. This result is analogous to (1.2.9) and is an immediate consequence of (1.1.8).

1.4.5 Corollary. *Let X be any smooth space and E any vector space with a linearly generated smooth structure. Then the smooth structure of $C^\infty(X, E)$ is also linearly generated.*

We give now some standard consequences of cartesian closedness.

1.4.6 Proposition. *For any smooth spaces X, Y, Z the evaluation $\text{ev}: C^\infty(X, Y) \times X \rightarrow Y$ and the composition $\text{comp}: C^\infty(Y, Z) \times C^\infty(X, Y) \rightarrow C^\infty(X, Z)$ are C^∞ -maps.*

Proof. Since $\text{ev} = (\text{id}_{C^\infty(X, Y)})^\wedge$, the first part is obvious. So is the second part since $\text{comp}^\wedge(g, f, x) = \text{ev}(g, \text{ev}(f, x))$ for appropriately chosen evaluation maps. $\square$

1.4.7 Definition. A smooth group G is a smooth space for which the underlying set has a given group structure such that the group multiplication $m: G \times G \rightarrow G$ and the inversion $v: G \rightarrow G$ are C^∞ -maps.

1.4.8 Proposition. *Let X be any smooth space. If one puts on the group $\text{Diff}(X)$ of all C^∞ -diffeomorphisms of X the initial smooth structure induced by the two maps $i, j: \text{Diff}(X) \rightarrow C^\infty(X, X)$, where $i(f) := f$ and $j(f) := f^{-1}$, then $\text{Diff}(X)$ is a smooth group.*

Alfred Frölicher, Andreas Kriegl. *Linear Spaces and Differentiation Theory*. John Wiley & Sons. 1988.

The New York Times

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NEW YORK, SATURDAY, FEBRUARY 15, 1997

\$1 beyond the greater New York metropol

Robert Mallary, 79, Junk Artist Behind the Growth of Sculpture

By ROBERTA SMITH

Robert Mallary, a junk artist who contributed to the blossoming of American sculpture in the late 1950's and early 60's, and was also a pioneer in the use of plastics and computers in art, died on Monday at Cooley-Dickinson Hospital in Northampton, Mass. He was 79 and lived in Conway, Mass.

The cause was leukemia, said his son, Michael.

Mr. Mallary, who did not have a New York gallery show from 1966 to 1993, largely dropped from view during the latter part of his career. But in the early 1960's, he was a prominent member of the Neo-Dada or junk art movement, with his work featured in *Life* magazine, included in the Museum of Modern Art's 1961 "Art of Assemblage" exhibition and widely collected and written about.

Along with talented young American artists like John Chamberlain, Richard Stankiewicz, Claes Oldenburg and Lee Bontecou, as well as European artists like Alberto Burri and Antonio Tàpies, Mr. Mallary

brought a fierce new physical reality to art through the use of found objects and unusual materials. In the early 60's, he favored trash — discarded pieces of cardboard, wood, cloth rags and clothing — and occasionally store-bought items like tuxedos. These he assembled, with the help of polyester resin, into rough, paintinglike reliefs and sculptures that veered between the angst of Abstract Expressionism and the insouciance of Pop Art.

Mr. Mallary was born in Toledo, Ohio, and grew up in Berkeley, Calif. He began studying art at the age of 8 and became infatuated with the work of the Mexican muralists as a teenager. In his early 20's, he went to Mexico City to study with José Clemente Orozco and David Alfaro Siqueiros, who was also an early advocate of the collaborations between art and technology. Inspired by Siqueiros, Mr. Mallary began experimenting with plastics in 1938.

In the 1940's and 50's, he worked with lucite, acetate, fiber glass, liquid plastics like polyester and acrylic, and black light to make lumines-

A pioneer in the use of plastics and computers who also favored trash.

cent sculptures. He exhibited polyester paintings at the Urban Gallery in New York in 1954, while teaching art in Los Angeles.

By the mid-1950's, while teaching at the University of New Mexico, he began making reliefs of sand and straw mixed with polyester. He moved to New York to teach at the Pratt Institute in Brooklyn in 1959, and soon began incorporating more urban detritus into his art, showing his new works at the Allan Stone Gallery in 1961, '62 and '68. A retrospective of his work was held at the State University of New York, Potsdam, in 1968.

In 1964, Mr. Mallary gave up the use of polyester resin, which is toxic,

because of liver problems, becoming one of the first artists to write about its hazards. He turned briefly to bronze, but became interested in the computer's potential as an artistic tool. In 1968, he exhibited in London a work that is considered one of the first computer-designed sculptures. Although he continued making assemblages, he then devoted the bulk of his energies to this new medium, writing and lecturing, and creating computer programs and computer-aided sculptures. An exhibition of new assemblages and computer graphics was held at the Mitchell Alpus Gallery in SoHo in 1993. From 1967 until his retirement last year Mr. Mallary taught art at the University of Massachusetts at Amherst.

In addition to his son Michael, of Berlin, Mass., he is survived by his wife, Margot, of New Rochelle, N.Y.; a son, Martin, also of New Rochelle; two daughters, Michelle Jurika of Piedmont, Calif. and Martine Mallary of Manhattan; a brother, John, of Antioch, Calif.; a sister, Jean Nell of Calistoga, Calif., and three grandchildren.

Márgenes de página

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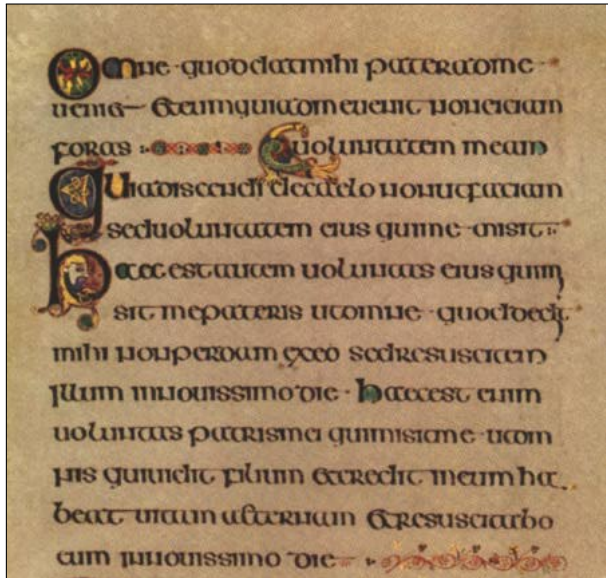
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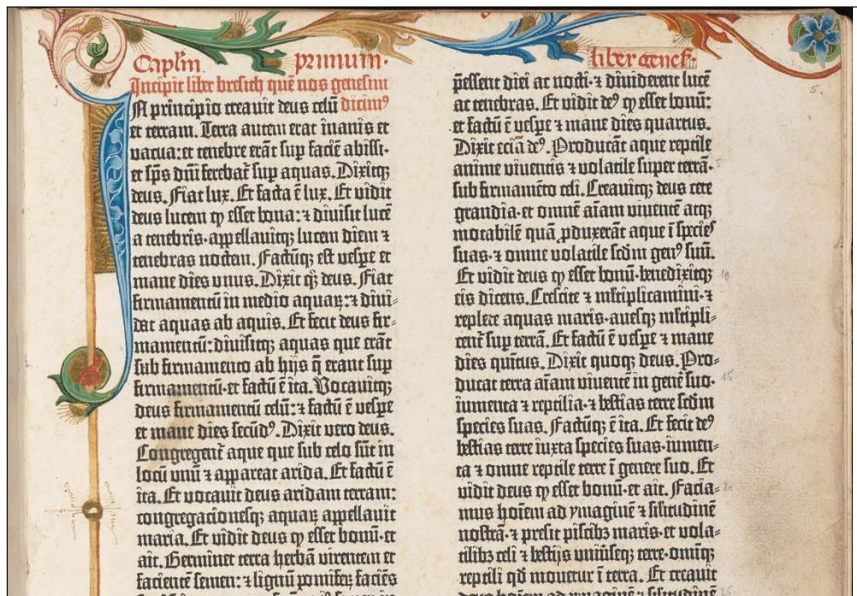
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Libro de Kells – c. 800 AD



Biblia de Gutenberg – c. 1450 AD



69.

Aufgaben zum II. Kapitel.

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20. Man setze, ähnlich wie in der vorigen Aufgabe,

$$\frac{\sqrt[n]{a_1} + \sqrt[n]{a_2} + \dots + \sqrt[n]{a_p}}{p} = s_n' \quad \text{und} \quad (s_n')^n = x_n'$$

und zeige, daß x_n' monoton fallend $\rightarrow \sqrt[p]{a_1 a_2 \dots a_p}$ strebt.

21. Das Intervall $a \dots b$ ($0 < a < b$) werde in n gleiche Teile geteilt; $x_0 = a, x_1, x_2, \dots, x_n = b$ seien die Teilpunkte. Man zeige, daß deren geometrisches Mittel

$$\sqrt[n+1]{x_0 \cdot x_1 \cdot x_2 \dots x_n} \rightarrow \frac{1}{e} \left(\frac{b^b}{a^a} \right)^{\frac{1}{b-a}}$$

und ihr harmonisches Mittel $\rightarrow \frac{b-a}{\log b - \log a}$ strebt.

22. Man zeige, daß im Falle der allgemeinen Folge in Aufgabe 5

$$\frac{x_n}{\alpha^n} \rightarrow \frac{x_1 - \beta x_0}{\alpha(\alpha - \beta)}$$

strebt.

23. Es sei $x > 0$ und die Folge (x_n) durch die Festsetzungen

$$x_1 = x, \quad x_2 = x^{x_1}, \quad x_3 = x^{x_2}, \quad \dots, \quad x_n = x^{x_{n-1}}, \quad \dots$$

definiert. Für welche x fällt diese Folge konvergent aus? (Antwort: Dann und nur dann, wenn

$$\left(\frac{1}{e} \right)^e \leq x \leq \frac{1}{e^e}$$

ist.)

24. Es sei $\lim x_n = \kappa$, $\overline{\lim} x_n = \mu$, $\lim x_n' = \kappa'$ und $\overline{\lim} x_n' = \mu'$. Was läßt sich über die Lage der Häufungsgrenzen der Folgen

$$(-x_n), \quad \left(\frac{1}{x_n} \right), \quad (x_n + x_n'), \quad (x_n - x_n'), \quad (x_n \cdot x_n'), \quad \left(\frac{x_n}{x_n'} \right)$$

aussagen? Man diskutiere alle möglichen Fälle!

Konrad Knopp. *Theorie und Anwendung der Unendlichen Reihen*. Zweite Auflage.

Springer. 1924.

Maquinilla

2.1 Definition: A quadrant $Q \subseteq \mathbb{R}^n$ is a subset of the form $Q = \{x \in \mathbb{R}^n: l_1(x) \geq 0, \dots, l_k(x) \geq 0\}$ where $\{l_1, \dots, l_k\}$ is a linearly independent subset of $(\mathbb{R}^n)^*$. Here $0 \leq k \leq n$ and k is called the index of Q .

If $x \in Q$ and exactly j of the l_i 's satisfy $l_i(x) = 0$, then x is called a corner of index j . The index of a corner depends only on x and Q and not on the special system $\{l_1, \dots, l_k\}$ describing Q .

2.2 Let $U \subseteq Q$ be an open subset of a quadrant Q . A function $f: U \rightarrow \mathbb{R}^p$ is called C^r ($0 \leq r \leq \infty$) if all partial derivatives of f of order $\leq r$ exist and are continuous on U . By the Whitney extension theorem (cf. H. WHITNEY (1936), J.C. TOUGERON (1972)) this is the case iff f can be extended to a C^r function $\tilde{f}: \tilde{U} \rightarrow \mathbb{R}^p$, where $\tilde{U} \subseteq \mathbb{R}^n$ is open and $U = Q \cap \tilde{U}$.

2.3 The border ∂Q of a quadrant Q is $\{x \in \mathbb{R}^n: l_1(x) = 0 \text{ or } l_2(x) = 0 \text{ or } \dots \text{ or } l_k(x) = 0\}$; it is the disjoint union of finitely many (plane) submanifolds of $\mathbb{R}^n$, the faces, edges, corners etc. of Q . ∂Q is "stratified" by this set of submanifolds.

Let $U \subseteq Q$, $U' \subseteq Q'$ be open subsets of quadrants in $\mathbb{R}^n$. A mapping $f: U \rightarrow U'$ is a diffeomorphism iff f is bijective and locally of maximal rank. It follows that f maps corners of index j in U to corners of index j in U' . So: $x \in U \subseteq Q$ is of index j iff $f(x) \in U' \subseteq Q'$ is of index j .

Peter Michor. *Manifolds of Differentiable Mappings*. Shiva Publishing Limited, Orpington. 1980.

$$12. i) \tau = 1 + \frac{1}{\tau} = 1 + \frac{1}{1 + \frac{1}{\tau}} = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{\tau}}} = \dots,$$

and the “pieces” of the limiting “continued fraction” $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{\dots}}}$ are

$$1, 1 + \frac{1}{1} = 2, 1 + \frac{1}{1 + \frac{1}{1}} = \frac{3}{2}, 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1}}} = \frac{5}{3}, \dots$$

with the general one being $\frac{u_{n+1}}{u_n}$;

ii) it is entirely reasonable to write

$$\tau = 1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \dots}}}.$$

13. For $m \geq 1, n \geq 1$:

$$i) u_{m+n} = u_{m-1}u_{n-1} + u_m u_n;$$

$$ii) u_{n-1} \text{ divides } u_{nm-1};$$

$$iii) (u_{n-1}, u_{m-1}) = u_{(n,m)-1}.$$

Joe Roberts. *Elementary Number Theory. A Problem Oriented Approach.*
The MIT Press, Cambridge. 1977.

¡Muchas Gracias!

