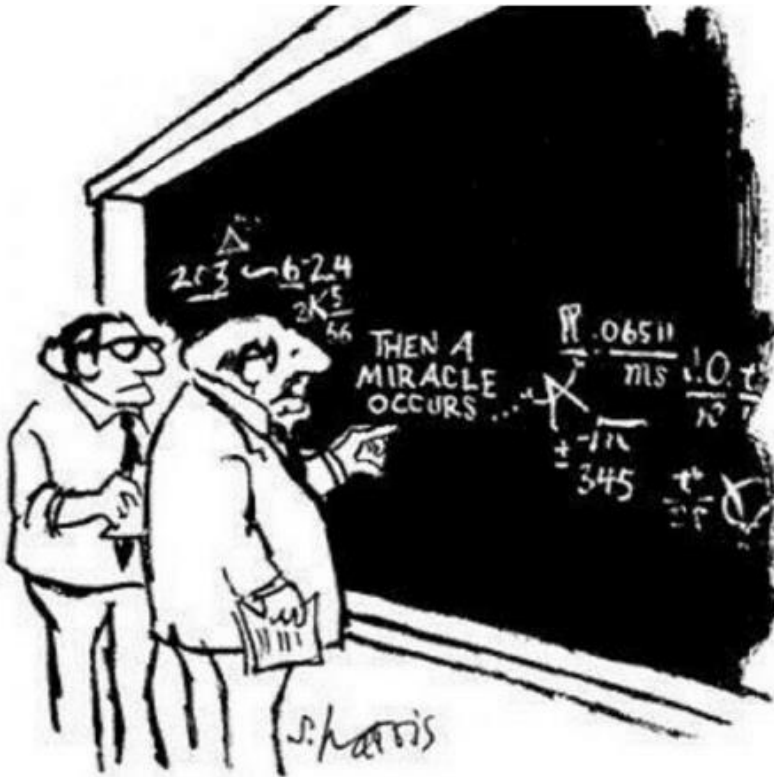


# Trabajos académicos y exposiciones orales



"I think you should be more explicit here in step two."

UNIVERSIDAD  
COMPLUTENSE DE MADRID.  
FACULTAD DE CIENCIAS  
MATEMÁTICAS.  
BIBLIOTECA

COMPETENCIAS EN  
RECURSOS DE  
INFORMACIÓN  
CIENTÍFICA  
(OCTUBRE 2019)

This is a subjective essay, and its title is misleading; a more honest title might be HOW I WRITE MATHEMATICS. It started with a committee of the American Mathematical Society, on which I served for a brief time, but it quickly became a private project that ran away with me. In an effort to bring it under control I asked a few friends to read it and criticize it. The criticisms were excellent; they were sharp, honest, and constructive; and they were contradictory. “Not enough concrete examples” said one; “don’t agree that more concrete examples are needed” said another. “Too long” said one; “maybe more is needed” said another. “There are traditional (and effective) methods of minimizing the tediousness of long proofs, such as breaking them up in a series of lemmas” said one. “One of the things that irritates me greatly is the custom (especially of beginners) to present a proof as a long series of elaborately stated, utterly boring lemmas” said another.

There was one thing that most of them had in common: they were all right.

Paul R. Halmos, *How to write Mathematics*,  
L’Enseignement mathématique, T. XVI, fasc. 2, 1970

# Tipos de trabajo

- Trabajo de Fin de Grado
- Trabajo de Fin de Máster
- Tesis Doctoral
- Artículo/conferencia científico
- Artículo/conferencia divulgativo
- ¿Examen, clase,...?

Distinta dificultad matemática, mismas pautas

# Escribir / Exponer

(comparación de prioridades)

Precisión

Ideas

Demostraciones

Resultados y/o ejemplos

Orden lógico

Orden de importancia

Detallar contexto y objetivos

Detallar aportaciones propias

Detallar conclusiones y futuras líneas

# Escribir / Exponer

¿qué debo contar?

Lo que a mí me gustaría  
que me dieran a leer

Lo que quite  
trabajo al lector

Lo que a mí me gustaría  
que me contaran

Lo que ayude  
a leer el trabajo

*Verba volant, scripta manent*

# Cómo redactar

- En el orden inverso
- El papel no es una pizarra:
  - Sin símbolos matemáticos
  - Sin tono coloquial (ni recargado)
- Un trabajo no es una novela:
  - Frases breves y precisas
  - Bien estructurado y etiquetado

# ¿Cuándo la versión es la final?

- No obsesionarse por las erratas (siempre hay)
- ¿Puedo añadir más puntos y seguido?
- ¿Es coherente la notación?
- ¿Es coherente el orden (definiciones, lemas,...)?
- ¿Abro por cualquier página al azar y sé dónde estoy?
- ¿Entiendo lo que he escrito tras esconder el trabajo una semana en un cajón?
- ¿Sé justificar cualquier cosa que haya escrito?

# Cómo exponer

- Con la emoción de quien habla de un hijo
- En pizarra:
  - Organizar espacios
  - Ideal: la visión final es un resumen
- Con transparencias:
  - Información poco a poco, no de golpe
  - Más chuletas que frases
  - ¿Bibliografía relevante?



# Algún ejemplo

## REGULARITY...

E. ARRONDO, S. MARCHESI

ABSTRACT.

1. INTRODUCTION

2. PRELIMINARIES

Qua ci metterei, dopo una veloce introduzione alla grassmanniane, tutte le sequenze esatte di cui abbiamo bisogno nell'articolo, compresa la parte che hai scritto tu nuova sui fibrati autoduali.

3. A NEW CONCEPT OF REGULARITY

Let  $G = \mathbb{G}(1, n)$  the Grassmannian of lines in  $\mathbb{P}^n$ .

Our first goal is to construct a special resolution of the hyperplane bundle  $\mathcal{O}_G(1)$ . Such resolution will be indeed special because the number of summands appearing in each step of the resolutions will be equal to the number of generators of the corresponding codimension in the Chow ring of  $G$ .

Recall first the canonical short exact sequence

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# La última palabra

## 20 THE LAST WORD

I have come to the end of all the advice on mathematical writing that I can compress into one essay. The recommendations I have been making are based partly on what I do, more on what I regret not having done, and most on what I wish others had done for me. You may criticize what I've said on many grounds, but I ask that a comparison of my present advice with my past action not be one of them. Do, please, as I say, and not as I do, and you'll do better. Then rewrite this essay and tell the next generation how to do better still.