

# Writing a math paper

## I. Organization is a most important thing

- A. Make an outline.
- B. The structure of the paper can be used to make it more readable.
  - 1. Introduction
    - a. Set the problem.
    - b. No suspense: tell the reader where you're going.
    - c. State the main result or where to find it.
  - 2. Section 2: Definitions and Motivations
  - 3. Make a separate section for each different topic.
  - 4. Concluding section: could put the following in it:
    - a. Directions for future research
    - b. Open questions
    - c. Conjectures
  - 5. Appendices: stuff that doesn't fit elsewhere can go here
- C. Methods of organization
  - 1. Tell a story.
  - 2. Ask a question.
    - a. Give an answer, immediately.
    - b. Then give the details.

## II. Writing proofs

- A. Repetition is *good*.
- B. Write in parallel when possible. For example:
  - 1. Case 1:  $n = 0$
  - 2. Case 2:  $n$  is positive
  - 3. Case 3:  $n$  is negative

## III. For the first draft, a good aphorism is: "Don't get it right, get it written."

- A. Write a quick introduction in the first draft. It can be fixed later.
- B. The introduction will likely be read more than any other part of the paper, and therefore should be the best written. But it can only be written right after the rest of the paper is done. So it will be rewritten later on. Maybe more than once.
- C. Agree with your group on some basic notation.
- D. After first draft is written, can permute the sections if necessary.