Foundations of undergraduate analysis

Yichao Huang, University of Helsinki

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Introduction to the course

Course format:

- Lecture on Monday/Tuesday: notes/slides available on the course web page.
- Exercice on Friday: exercices will be graded (30p).
- Quiz on Tuesday: about 20 minutes each (20p).
- Final exam (50p).

Advices and recommendations:

- Give feedback and interact with others.
- Do exercices (several times), ask questions!
- Find your own rythme and form good habits.

Zoom: pros and cons

Bonus points:

- You can drink and eat while attending the course!
- Arguably the future of learning method.

Minus points and how to fight against them:

- Online material are available everywhere (e.g. MIT). Take advantage of the fact that your teacher is a real person and can adjust to your needs: give feedbacks and ask questions!
- Less social interaction and more individual works. Try to form study groups, organize regular meeting and try to see each other in real life.
- Learning environment can be too relaxed. Keep taking notes during the course: you memorize things better if you do it yourself!

Week I: Outline

1. Mathematical symbols: $\forall, \exists, \Rightarrow$ etc.
2. Mathematical induction
3. Basic elements of set theory
4. A taste of combinatorics
5. Infimum and supremum
6. An epsilon of room

Symbols (and logic)

Logic in every day life

Examples of proofs

Set, elements, subsets

What is a set?

A **set** is a well-defined collection of distinct objects.

Counting finite sets

Infimum and supremum

Say hello to epsilon