ANALYSIS I

Michaelmas Term 2018

Information and advice for those taking the course

This is based on the advice provided by Hilary Priestley, who was the Analysis I lecturer before me; the webnotes and the problem sheets are also hers.

The lectures will focus on key ideas, proof techniques and important examples. In them I will explain why the central results are important, and these results will be proved in full in lectures. The notes summarise the lecture material, in more or less detail, and will contain some proofs omitted from, or only outlined in, lectures. They will also include extra worked examples, which should be treated as an integral part of the course. Supplementary notes are provided for a few topics which are background material, not covered in depth in lectures.

The first three lectures will be devoted to a discussion of the real numbers. A reference sheet, *Axioms for the Real Numbers*, summarises the assumptions which underlie the material in Analysis I. This sheet can be found on the Analysis I webpages; please bring a copy with you to the first few lectures.

You are recommended to take at least some notes of your own in lectures to supplement the notes from the web. You will gain most from the lectures if you read through the relevant part of the notes in advance of each lecture. This will enable you to get a first impression of the content and thereby make it easier for you to take effective complementary notes for yourself.

You might find the following book useful in the early stages of this course when the ideas in Analysis I are very unfamiliar:

D. Appelbaum, *Limits, Limits Everywhere: the Tools of Mathematical Analysis* (Oxford University Press, 2012).

It is a lively and easy-to-read account of the fundamental ideas about sequences and series, with helpful examples and historical titbits. The book is however not designed to be a course text and should not be treated as such.

Problem sheets

There will be seven problem sheets. The sheet numbered k is intended for tutorials in week $k+2$ (where $1 \leqslant k \leqslant 6$), and sheet 7 is to be attempted over the vacation and covered in tutorials at the start of Hilary Term.

Frances Kirwan