Introduction

M.Sc. in Mathematical Modelling & Scientific Computing,
Practical Numerical Analysis

Michaelmas Term 2023

Introduction to Practical Numerical Analysis

- ▶ Lectures: 3pm on Wednesdays in L3 in weeks 1–8 and 12 noon on Fridays in L5 in weeks 1, 2, 4, 6, 8.
- ▶ After week 1, the Wednesday lecture will go through concepts and the Friday lecture will go through the problem sheets.
- ▶ There will be four problem sheets to be submitted on Tuesdays by 5pm in weeks 2, 4, 6, 8.
- ▶ Idea is to learn to programme algorithms by a set of examples from Numerical Analysis.
- ▶ Course materials, including lecture recordings, slides and problem sheets, will be available from https://courses.maths.ox.ac.uk/course/view.php?id=5175.

Introduction to Practical Numerical Analysis

Topics we will look at are

- ▶ Interpolation
- ▶ Quadrature
- ▶ Rootfinding
- ▶ ODEs (initial value problems)
  - ▶ Simple Euler schemes
  - ▶ Runge Kutta schemes
  - ▶ Linear multistep methods
- ▶ Parabolic PDEs — the heat equation

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The idea of the Wednesday lectures (and Friday in week 1) is to summarise the ideas for a topic. While there may be theorems stated, there will not be many proofs — this is meant to be a practical course.