# MATH40007 Introduction to Applied Mathematics

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**Syllabus**

This module provides a transition towards the way you will be thinking about, and doing, Mathematics during your degree. It will stress the importance of precise definitions and rigorous proofs, but also discuss their relationship to more informal styles of reasoning which are often encountered in applications of Mathematics. Topics to be covered will include an introduction to abstract sets, functions and relations, common proof strategies, the naturals, rationals and reals, and elementary vector operations and geometry.

# Contents

# 0   Introduction

The following are references.

- E Artin, Galois theory, 1994

- A Grothendieck and M Raynaud, Revêtements étales et groupe fondamental, 2002

- I N Herstein, Topics in algebra, 1975

- M Reid, Galois theory, 2014

Lecture 1
Thursday
10/01/19

**Notation.** If $K$ is a field, or a ring, I denote

$$K[X] = \{a_0 + \cdots + a_n X^n \, a_i \in K\},$$

the **ring of polynomials** with coefficients in $K$.