

BO1.1. History of Mathematics

Sheet 1 — MT23

Reading for weeks 1–3:

- Stedall, Chapters 3, 5, 9 and 10
- Katz, Chapters 13, 15, 16, and Section 14.2

(On analytic geometry, mathematics and the physical world, the origins of the calculus, Newton's *Principia*, the initial applications of calculus, and the emerging notion of a 'function'.)

Essay to be submitted ahead of the class in week 3:

It has sometimes been claimed that Fermat should be considered as one of the founders of the calculus. More recently, Katz has attributed the Fundamental Theorem of Calculus to Gregory and Barrow. What arguments can be given for or against such claims? What does it mean to say that Newton or Leibniz 'discovered' the calculus? Does being 'first' matter? (1,000 words)

Discussion topic to be prepared for the class in week 3:

Read the extract in *Mathematics emerging*, §3.2.1 (Fermat's evaluation of an 'infinite' area) and be prepared to discuss it in class under the following headings.

- (i) Context: when, where, and for whom was the piece written? What mathematical background does it assume?
- (ii) Content: work through the content as carefully as you can, noting the parts that are particularly difficult or tricky. Is Fermat's argument convincing?
- (iii) Significance: how important was this piece of work in the 17th-century development of methods of quadrature?