

BO1.1. History of Mathematics

Sheet 3 — HT21

Leonhard Euler on ‘analysis’

The main text for this third part of the reading course is Leonhard Euler’s *Introductio ad analysin infinitorum* (1748).

Recommended reading for **weeks 5** and **6** — first some preliminaries, to gain an impression of the uses of the word ‘analysis’ between Newton and Euler (don’t spend too long on these):

- Jacob Bernoulli’s curve of uniform descent, as found in *Mathematics emerging* (§10.1.1);¹
- l’Hôpital’s Preface to his *Analyse des infiniments petits pour l’intelligence des lignes courbes* (1696), as found in Fauvel and Gray’s *Reader* (13.B5);

and then Euler’s introductory material on functions and series:

- pp. v–xi (Preface);
- pp. 2–16 (chapter 1, §1–§26: functions);
- pp. 50–63 (chapter 4, §59–§76: functions as infinite series);

plus his manipulations of the infinitely large and small:

- pp. 92–100 (chapter 7, §114–§125: log series);
- pp. 101–115 (chapter 8, §126–§142: circle functions).

There is a lot of interesting material here, and it’s a shame we can’t read more of it, so do browse more widely if you have the time.

Ahead of the class in **week 7**, please submit a 2,000-word essay (by email) by 9am on Monday of week 7. Here are some suggestions as to what points you might choose to focus on in your research and your essay. Every essay needs some background to set the context. Beyond that, you should NOT expect to cover everything. There is much too much here. Choose one or two points to focus on.

¹Full details: ‘Analysis problematis antehac propositi, de inventione lineae descensus a corpore gravi percurrendae uniformiter, sic ut temporibus aequalibus aequales altitudines emetiatur: et alterius cujusdam problematis propositio’, *Acta Eruditorum* (1690), pp. 217–219.

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- What was Euler's motivation?
- How does this text fit into the rest of his corpus?
- Which writers did Euler read and refer to?
- Summarise the material studied.
- How did Euler's understanding of the term 'analysis' compare with that of the other authors we have read?
- What else (briefly) does the text contain?
- When and how were his ideas taken up?

When reading and writing about Euler's *Introductio*, you might find the following article useful:

- V. Frederick Rickey, 'A reader's guide to Euler's *Introductio*',
<http://fredrickey.info/hm/Euler-Introductio.pdf>

And remember that for the wider context of Euler's writings, you can go back to the standard textbooks such as Katz.