

# BO1.1. History of Mathematics

## Sheet 1 — HT21

### William Oughtred on 'analysis'

The main text for this first part of the reading course is William Oughtred's *The key to the mathematicks new forged and filed* (London, 1647).

Recommended reading for **weeks 1 and 2** (for discussion in the classes in **weeks 2 and 3**) — Oughtred's introduction to the 'analytic art', and the ways in which he put it to use (please try to read at least to p. 75 ahead of the class in week 2):

- pp. 1–11 (chapters I–IV: notation, operations);
- pp. 33–48 (chapters XI–XIV: 'species', powers, 'analysis');
- pp. 53–57 (chapter XVI: analytic equations);
- pp. 68–75 (chapter XVIII: the 'analytical store');
- pp. 81–91 (chapter XIX: problems I–IX).

Select two of the above examples from chapter XIX to explain in detail in the class. In addition, have a look at Oughtred's solution of the equation  $x^3 + 420,000x = 247,651,713$  (p. 142). Do not spend too long on it, but see if you can work out how Oughtred arrived (correctly) at a solution of 417. For comparison, read also the following selections from Descartes' *Géométrie*, as found in *Mathematics emerging*: §2.3.3 (Descartes' method) and §3.1.2 (an application of the method).

Ahead of the class in **week 3**, please submit a 2,000-word essay (by email) by 9am on Monday of week 3. 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.

- What was Oughtred's motivation?
- How does this text fit into the rest of his corpus?
- Which writers did Oughtred read and refer to?
- How did Oughtred's understanding of 'analysis' and its application to mathematics compare to that of other writers, such as Viète and Descartes?

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- Summarise the material studied.
- What else (briefly) does the text contain?
- When and how were his ideas taken up?

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

- Jacqueline Anne Stedall, 'Ariadne's thread: The life and times of Oughtred's *Clavis*', *Annals of Science* 57(1) (2000), pp. 27–60.