History of Mathematics

the supplementary module about all of mathematics across all times and places
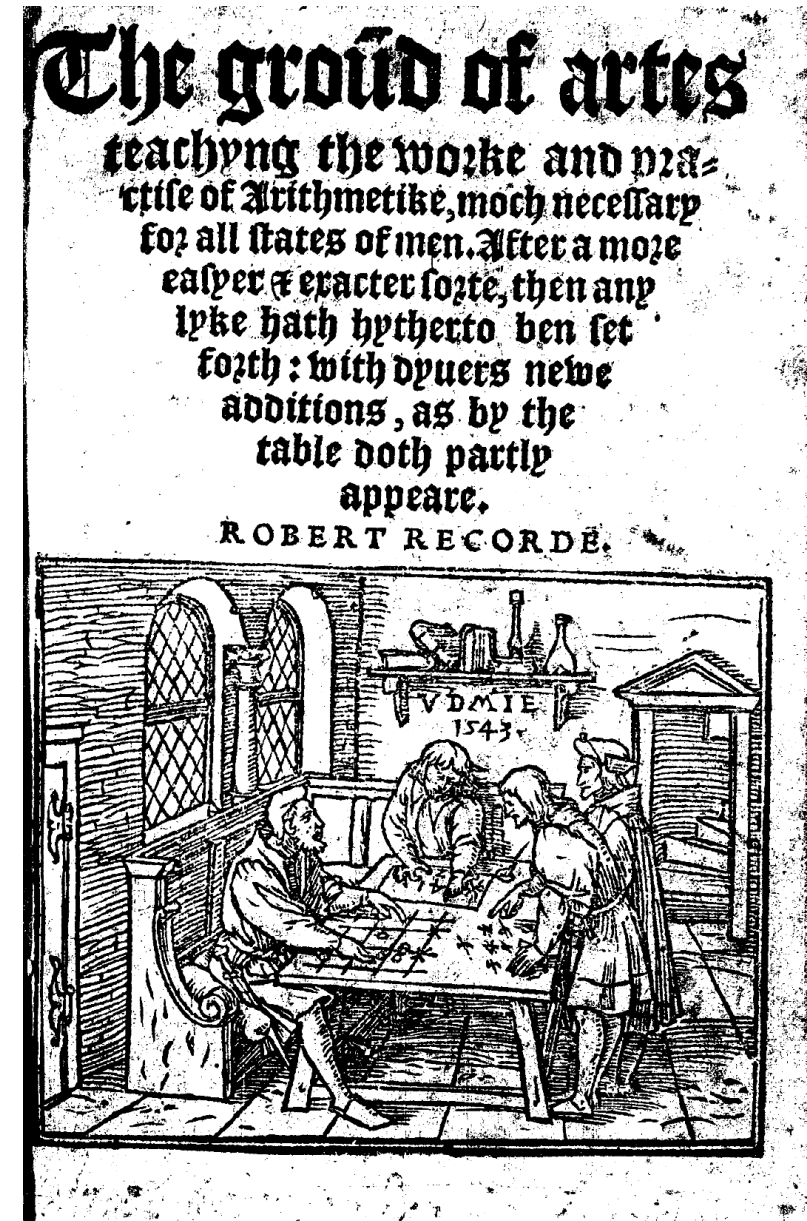
SMSTC Symposium, 30 September 2020

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Science Technology & Innovation Studies

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The groud of artes

teachyng the worke and practise of Arithmetike, moch necessary for all states of men. After a more easyer & exacter sorte, then any lyke hath hytherto ben set forth : with dyuers newe addicions, as by the table doth partly appeare.

ROBERT RECORDE.

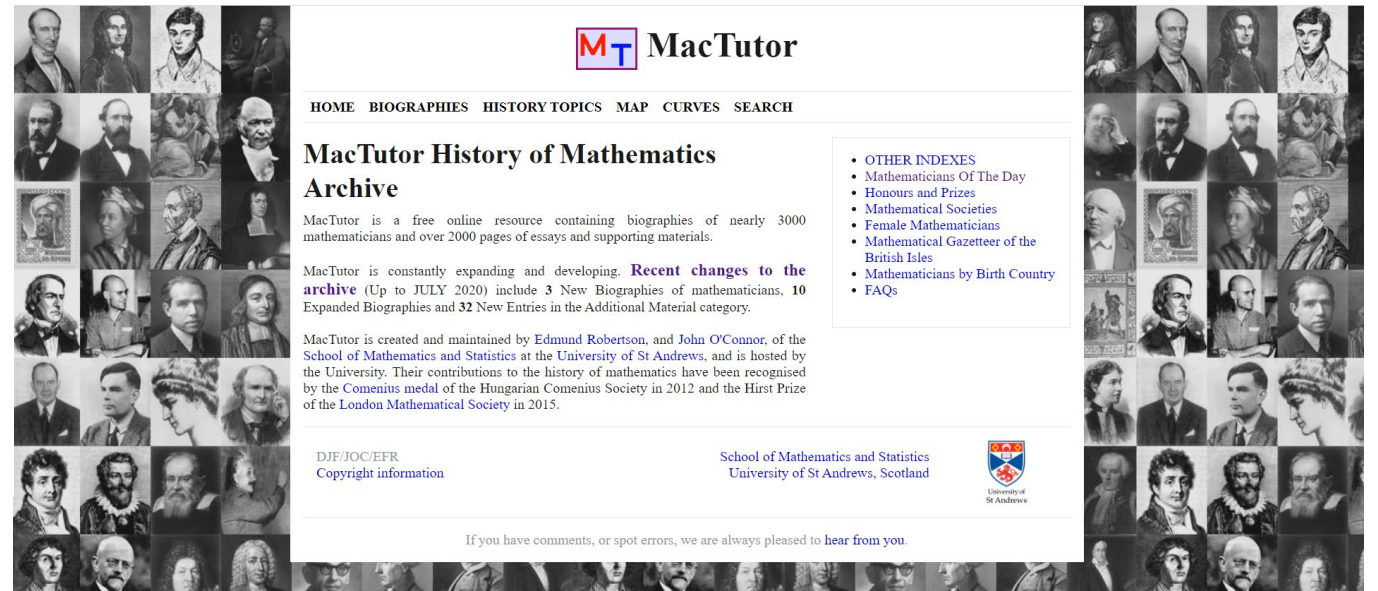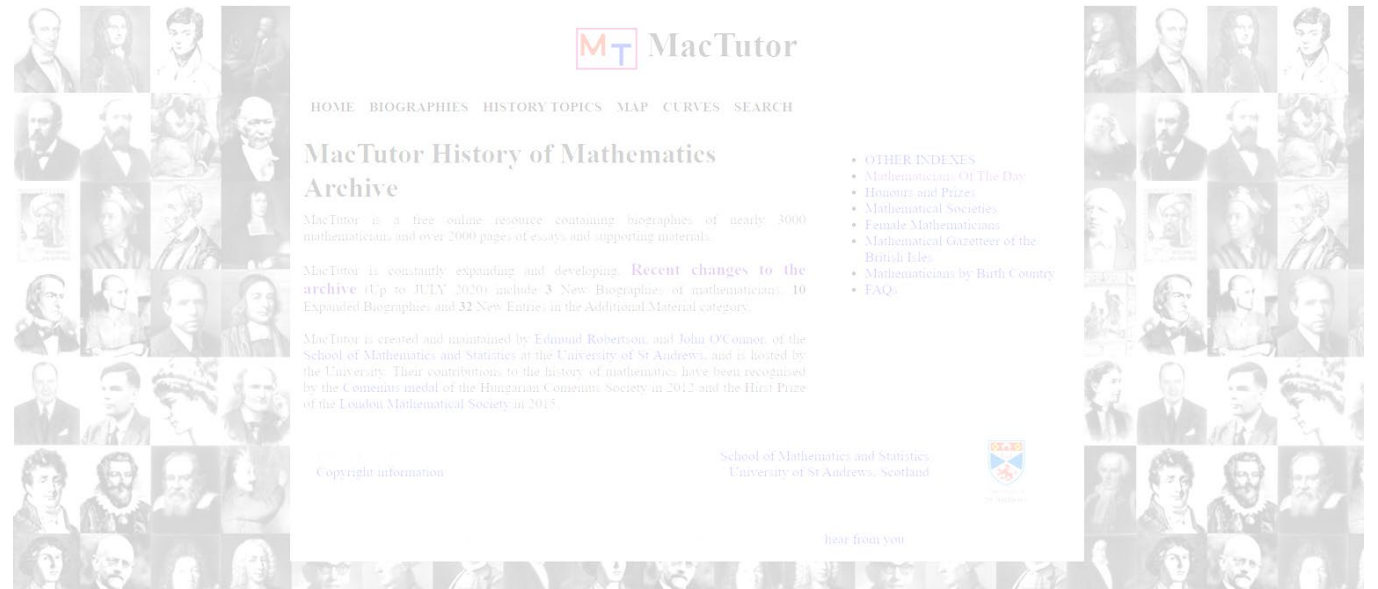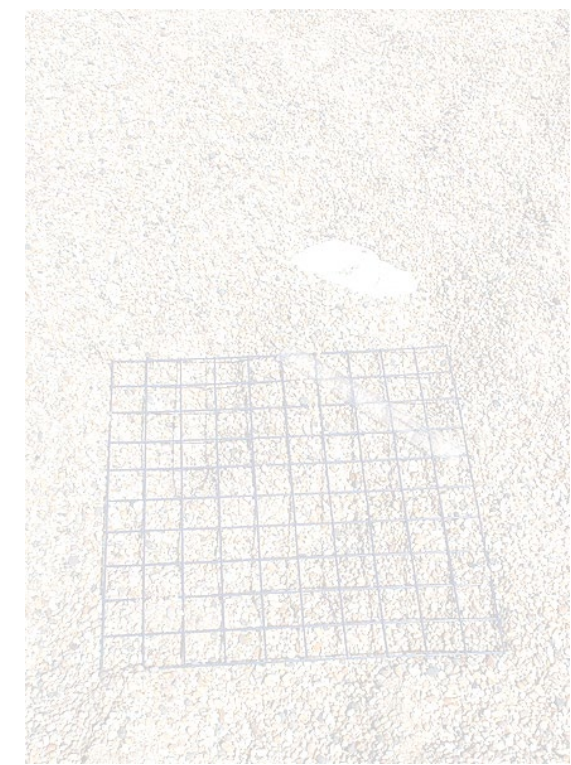# A question

Who invented calculus?

LIBRARY OF USEFUL KNOWLEDGE.

THE

DIFFERENTIAL AND INTEGRAL

CALCULUS

CONTAINING

DIFFERENTIATION, INTEGRATION, DEVELOPMENT, SERIES, DIFFERENTIAL EQUA-
TIONS, DIFFERENCES, SUMMATION, EQUATIONS OF DIFFERENCES, CALCULUS
OF VARIATIONS, DEFINITE INTEGRALS,—WITH APPLICATIONS TO
ALGEBRA, PLANE GEOMETRY, SOLID GEOMETRY,
AND MECHANICS.

Images: De Morgan 1842, MacTutor front page, quadrat on Chesil Beach (Wikimedia Commons)

A question

Who invented calculus?

Is this a trick question?

A question

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Is this a trick question?

There are no *trick* questions,
just *surprisingly interesting* ones!

Who invented calculus?

- This is **not** a *conventionally interesting* question.
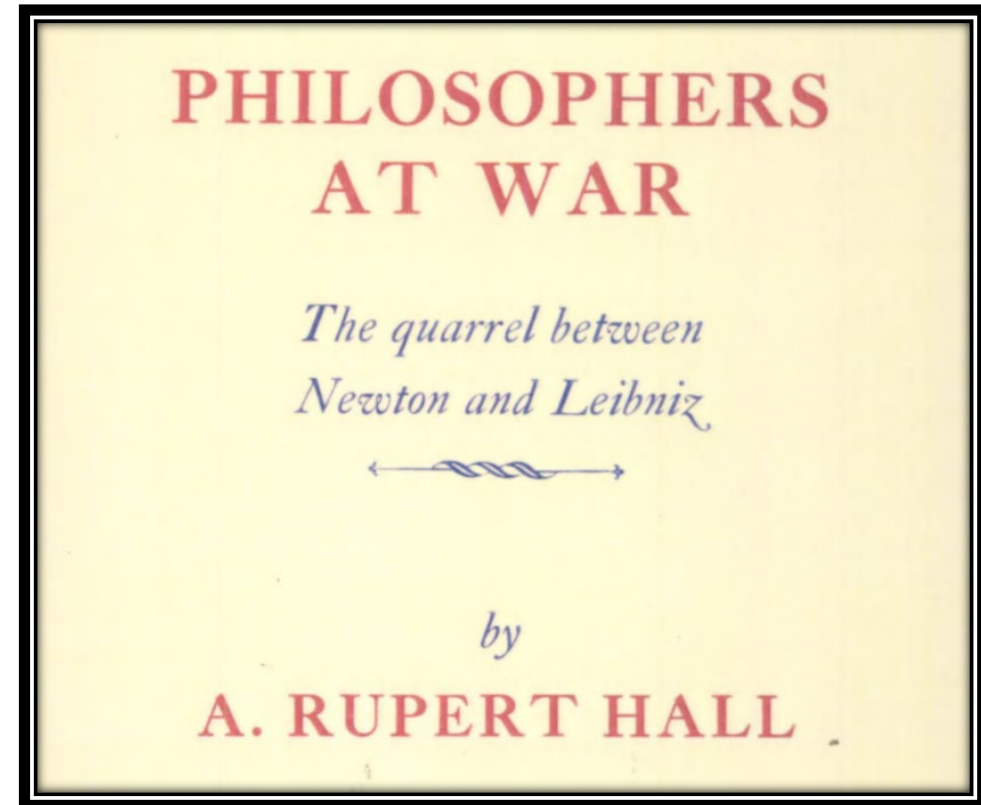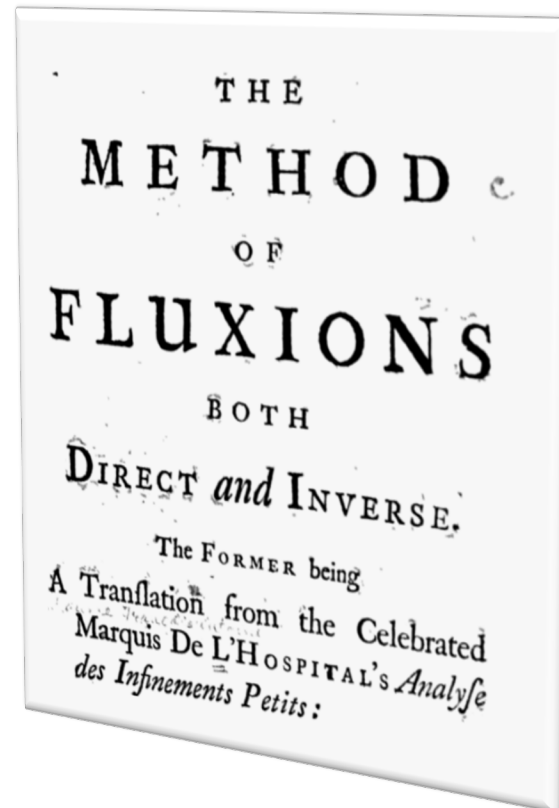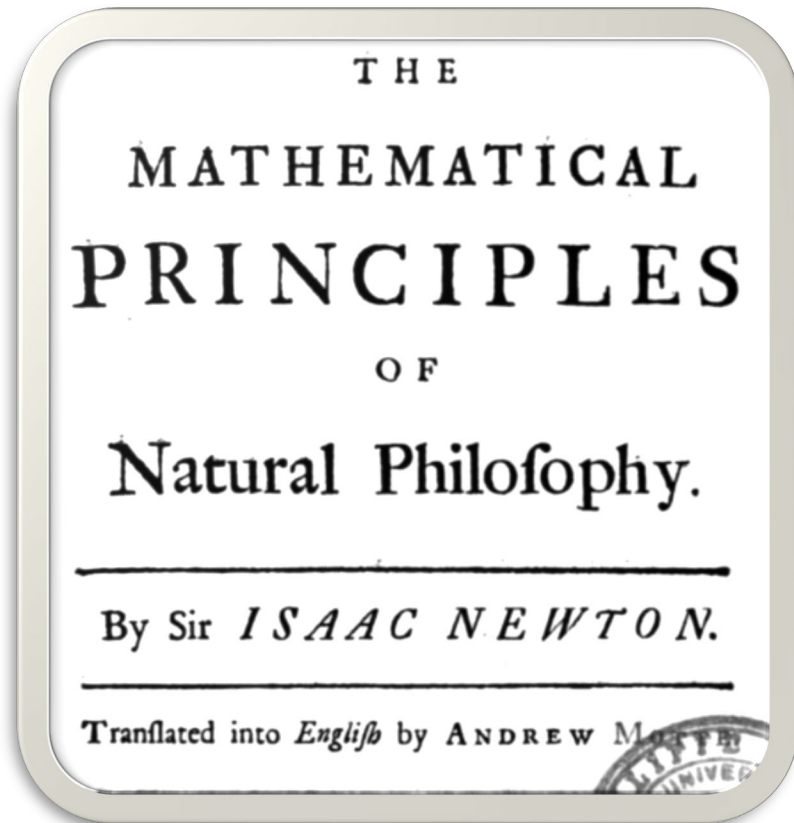
Who invented calculus?

- This is **not** a *conventionally interesting* question.
  - Historians do not tend to be interested in priority disputes *in themselves.*
  - Circular question: the answer always depends on what you mean by calculus, but the goal is to understand what *different people* meant in their times and places, not what *you* mean.
  - Where it started doesn't determine what it meant.
  - Heroes are boring, context is awesome.

EQUIVALENCE AND PRIORITY
NEWTON VERSUS LEIBNIZ
Including Leibniz's unpublished manuscripts on the *Principia*
DOMENICO BERTOLONI MELI
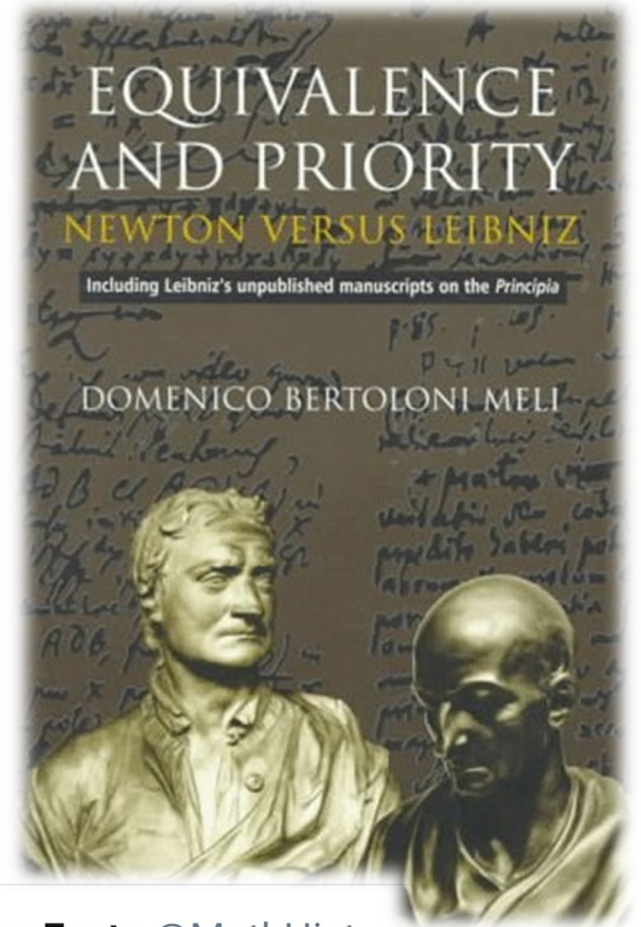
Math History Facts @MathHist...

Gottfried Wilhelm Leibniz, born OTD*, invented all the good parts of the calculus. #OTD #calculus #mtbos

*On That Day, 1 July 1646

Who invented calculus?

- This is ***a very*** *surprisingly interesting* question.
  - The priority question itself and debates over it animated generations of science and philosophy.

The Newton Wars & the BEGINNING of the FRENCH ENLIGHTENMENT
J. B. Shank
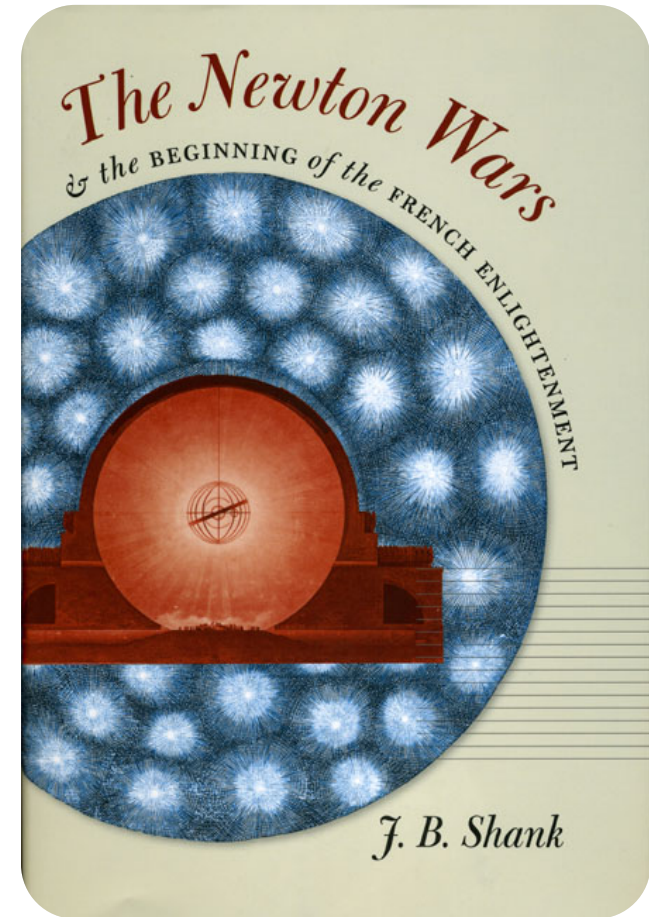
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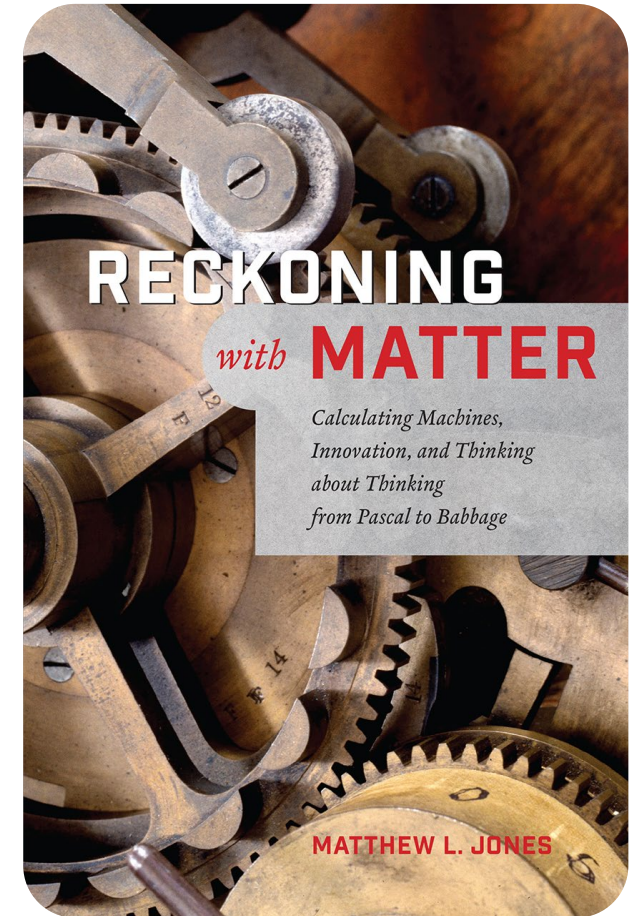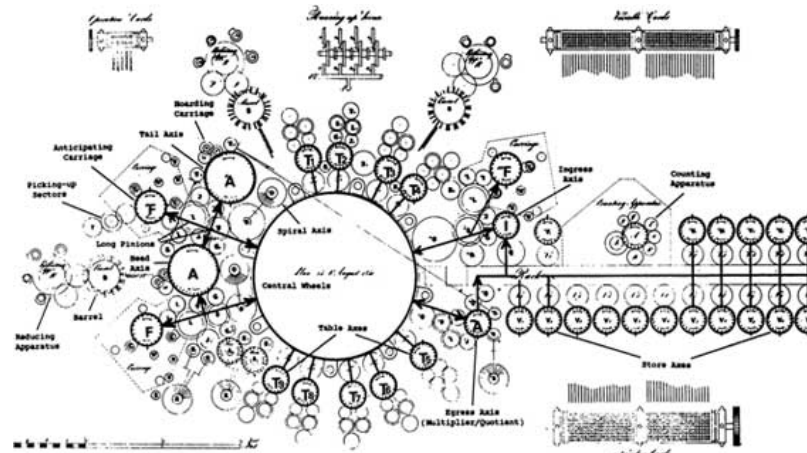
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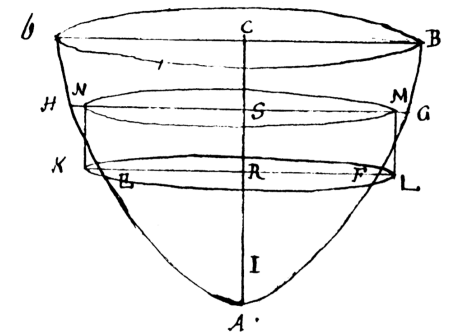
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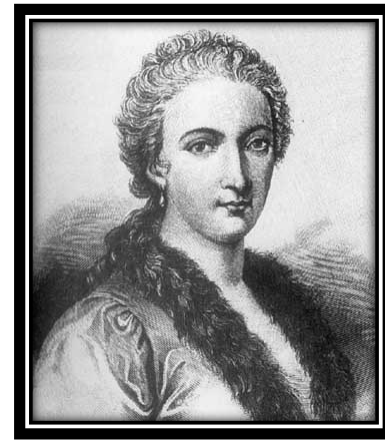 - Calculus is a key to capitalism, colonialism, slavery, democracy, and other central facets of modern history.
  - Calculus has defined what rational inquiry was and who could perform it.
  - Calculus has been at the centre of major changes to education, theory, and society.

Training

Who invented calculus?

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  - Calcu[...] long [...]
  - Calcu[...] dem[...]
  - Calcu[...] coul[...]
  - Calcu[...] educ[...]

Calculus has been **continually reinvented**, and the story of its reinvention is the story of centuries of transformations in science and society.

History of Mathematics

- Collaborative, discussion-based

- Current literature and primary sources

- Formal assessment available by arrangement if required

1. Introduction, how to read like a historian	6. Intermediate values
2. Origins and sources	7. Problems and practices
3. Rhetoric and form	8. Foundations and roots
4. Geometry and nature	9. Minds and machines
5. Enlightenment	10. Globalisation