

Eudoxus, the most important mathematician you've never heard of

Yes, we speak of things that matter
With words that must be said
"Can analysis be worthwhile?"
"Is the theater really dead?"

Simon and Garfunkel,
"The Dangling Conversation"

Before Eudoxus

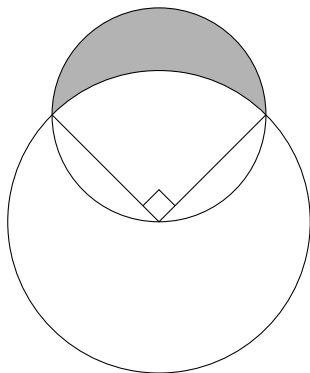
Eudoxus: Definitions

Eudoxus: Theorems

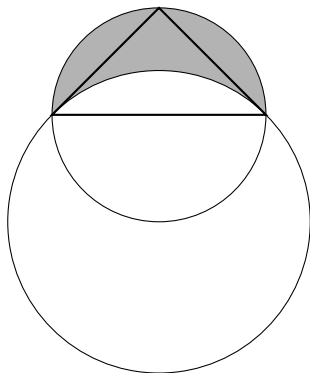
After Eudoxus

Hippocrates of Chios and his Lune

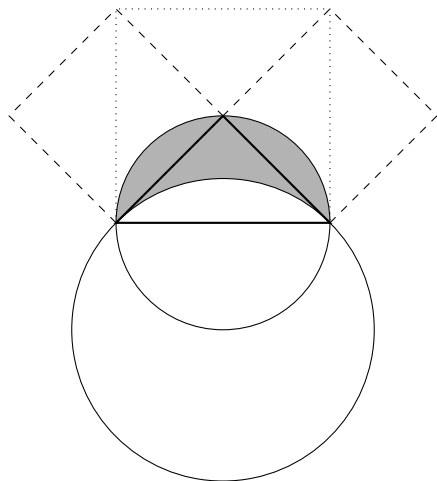
Hippocrates of Chios and his Lune



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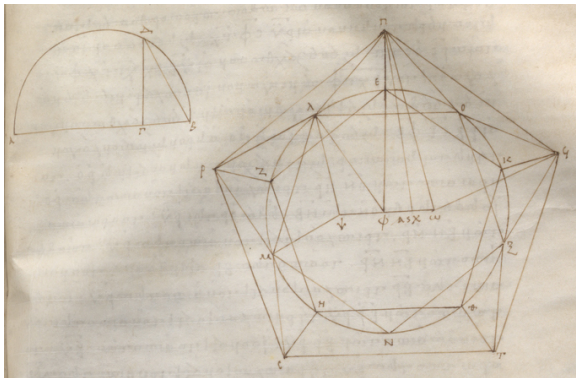


Greek geometric figures

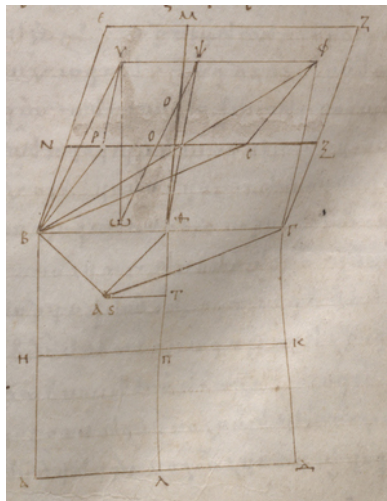
Greek geometric figures



Greek geometric figures



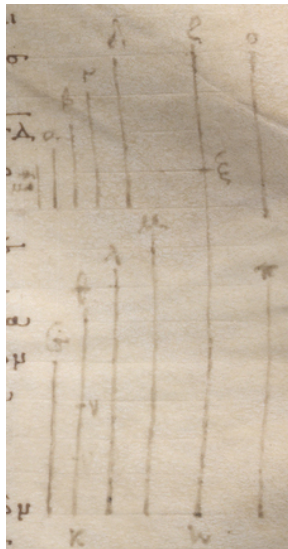
Greek geometric figures



Greek number-theoretic figures



Greek number-theoretic figures



“Dedekind cuts”

“Dedekind cuts”

Ἐπιπέδῳ αὐτοῖς μέγεθος μὲν ἔστω ἡ μὲν ἄρα πρῶτον πρὸς
 δεξιῶν ἐκ τριῶν πρὸς ἄρτον. ὅταν τῆς αὐτοῦ πρῶτου
 ἐκ τριῶν ἰσάλῃσιν ὁμοιωχάσῃσιν. τῶν τοῦ δεξιῶν ἐκ
 τριῶν ἰσάλῃσιν ὁμοιωχάσῃσιν. καὶ τῶν αὐτοῦ ὁμοιωχάσῃσιν
 ὁμοιωχάσῃσιν ὁμοιωχάσῃσιν. ἢ ἄρα ἰσάλῃσιν ἢ
 ἢ ἄρα ἰσάλῃσιν ἢ ἄρα ὁμοιωχάσῃσιν ὁμοιωχάσῃσιν.

“Dedekind cuts”

Definition (*Elements* V.5)

“Magnitudes are said to be in the same ratio, the first to the second and the third to the fourth, when, if any equimultiples whatever be taken of the first and third, and any equimultiples whatever of the second and fourth, the former equimultiples alike exceed, are alike equal to, or alike fall short of, the latter equimultiples respectively taken in corresponding order.” (trans. Thomas Little Heath)

The “Archimedean” property

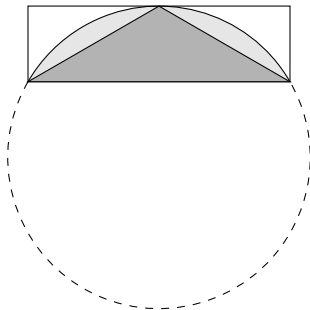
The “Archimedean” property

Definition (*Elements* V.4)

“Magnitudes are said to have a ratio to one another which are capable, when multiplied, of exceeding one another.” (trans. Thomas Little Heath)

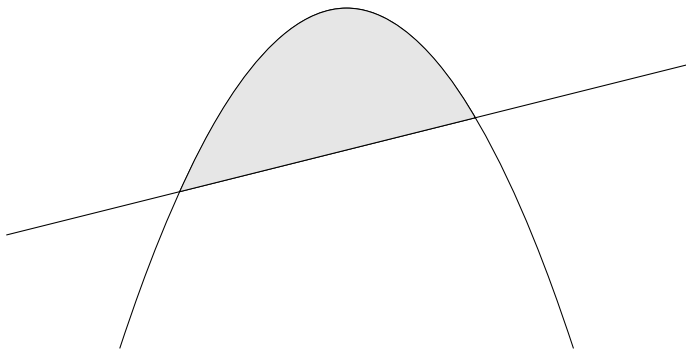
The method of exhaustion

The method of exhaustion

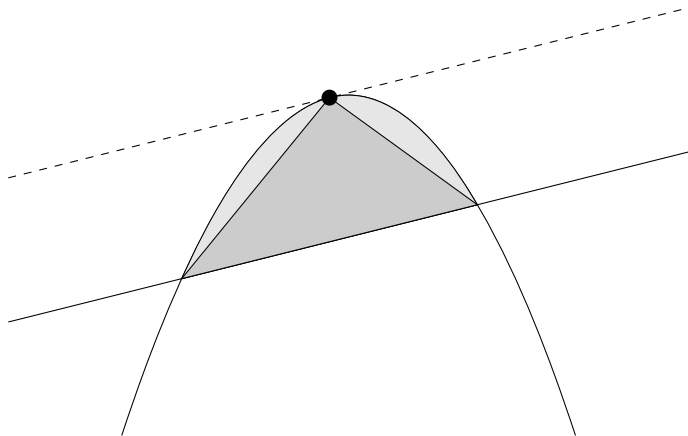


Archimedes

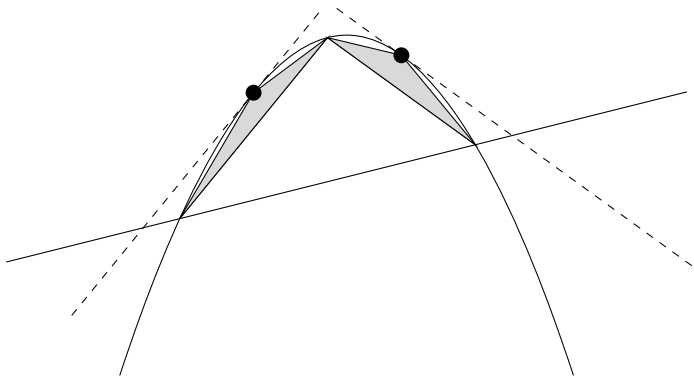
Archimedes's parabola



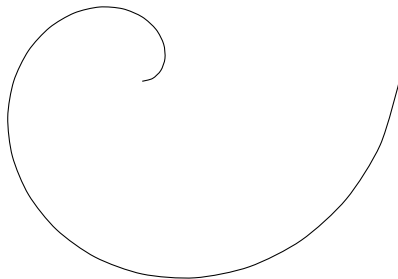
Archimedes's parabola



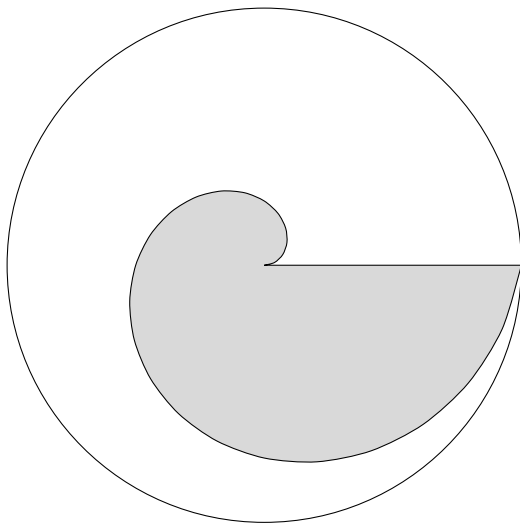
Archimedes's parabola



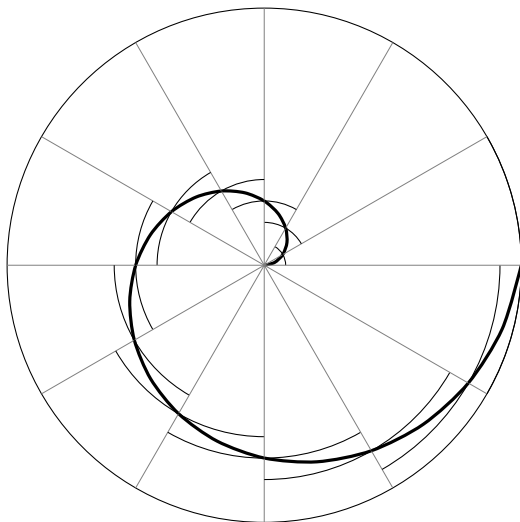
Archimedes's spiral



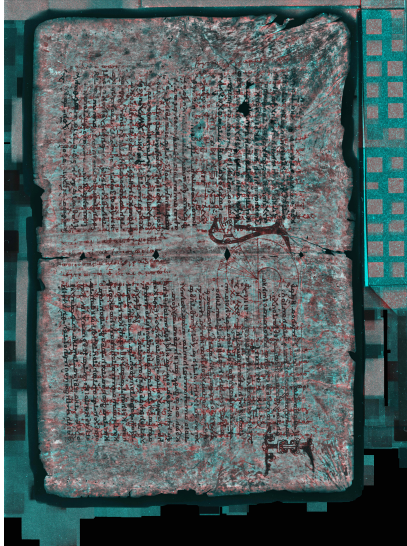
Archimedes's spiral



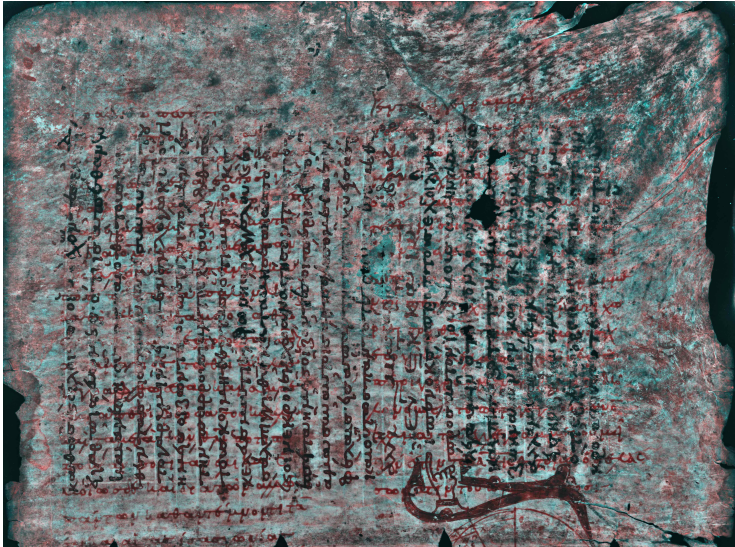
Archimedes's spiral



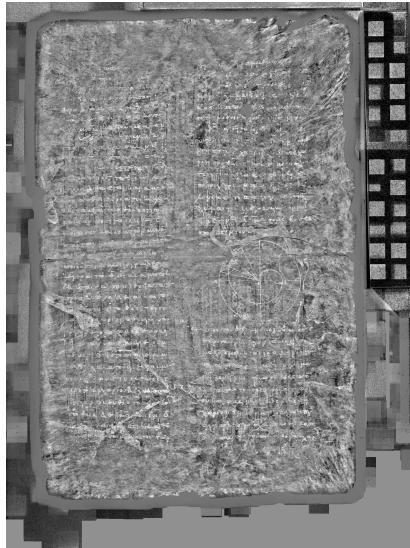
The Archimedes Palimpsest



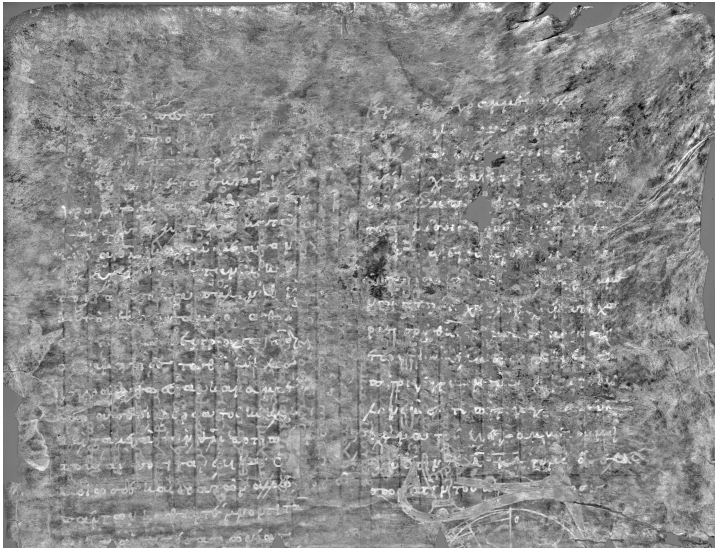
The Archimedes Palimpsest



The Archimedes Palimpsest



The Archimedes Palimpsest



The Archimedes Palimpsest

