# Riemann Integration.

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## CALCULUS

An old subject modified during 450 BC – till date.

"meaning": came from Latin:- small stone / pebbel.

Started by ("perhaps"): Antiphone (430 BC. Greece).

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Euclid (300 BC, Alexandria)

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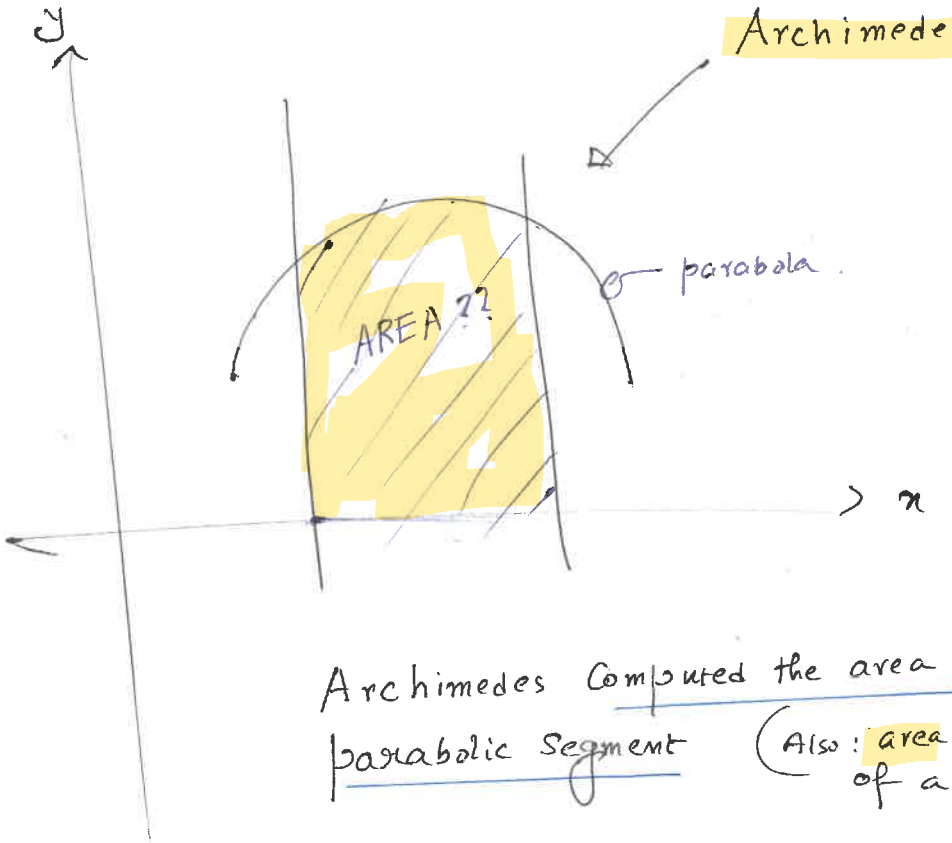
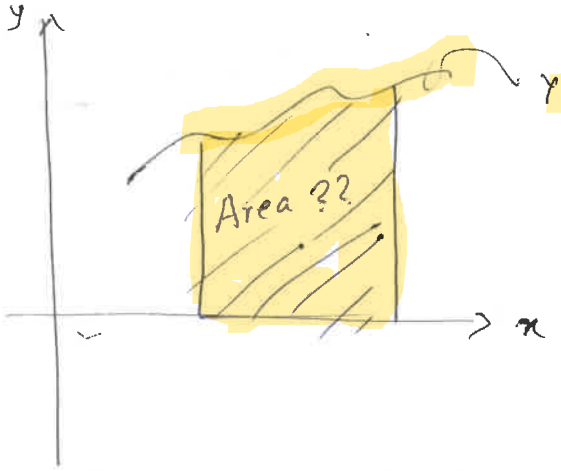
Archimedes (250 BC, Greece).



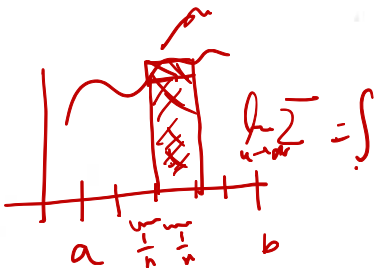

Archimedes computed the area of a parabolic segment (Also: area & circumference of a circle).

Then he asked:

Area of :




Ans: (Newton & ~~Leibniz~~ Leibniz : 1670).




He needs it for his law of motion.

This integration is/was fine : AND that's our "School integration."

It is still the "BEST"! BUT, Conceptually.

∴ ① School/Newton/Leibniz integration: $\{f : [a,b] \to \mathbb{R}$ Cont. fn$\}$.

② Riemann integration : An integration which make sense for bdd & not "too" "badly" discont. fn.

[He needed it for integrations of discont. fn (not too many discont.), to study Fourier series.]

Present interest

What is the measurement of "too badly" ?

③ Lebesgue integration : Deals with "highly" discont. & unbdd fn's.

In master's : measure theory.