

Department of Mathematics

In-House Staff Seminar Series

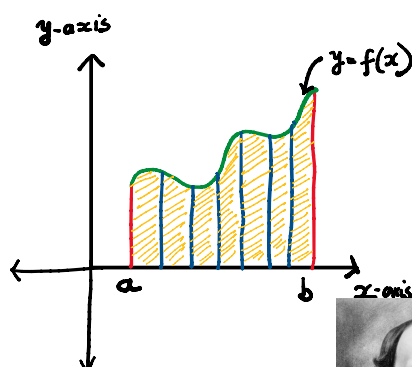


TITLE: *The idea of Integration; Riemann and Lebesgue (Part II)*

Speaker: *Susobhan Mazumdar*

TIME: *3PM, November 26, 2021*

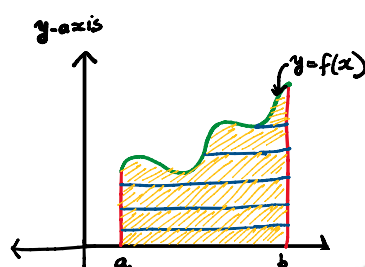
Venue: *Lab 7, 2nd Floor, Magis Block*



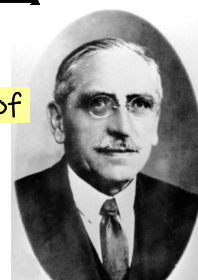
Riemann's Idea of Integration



Georg Friedrich Bernhard Riemann
(1826-1866)



Lebesgue's Idea of Integration



Henri Lebesgue
(1875-1941)

Henry Lebesgue wrote to Paul Montel in a letter :

"I have to pay a certain sum, which I have collected in my pocket. I take the bills and coins out of my pocket and give them to the creditor in the order I find them until I have reached the total sum.
This is the Riemann integral."

"But I can proceed differently. After I have taken all the money out of my pocket I order the bills and coins according to identical values and then I pay the several heaps one after the other to the creditor.
This is my integral."

In the previous talk we saw how the idea of finding area was an important aspect of mathematics from ancient times. We learned that the pursuit of "squaring the circle" was an impossible task after Lindemann showed that π is a transcendental number.

In this talk we will understand the different definitions of integration which were introduced by Cauchy, Darboux and Riemann. We will look into the shortcomings of Riemann's idea of integration and further learn how Lebesgue's idea of integration helped to overcome the difficulties. We will quickly discuss how defining the measure of a subset of Euclidean Space is an important aspect of defining Lebesgue Integration.

*****ALL ARE WELCOME*****