Math 121: Honours Integral Calculus

Lecture 1

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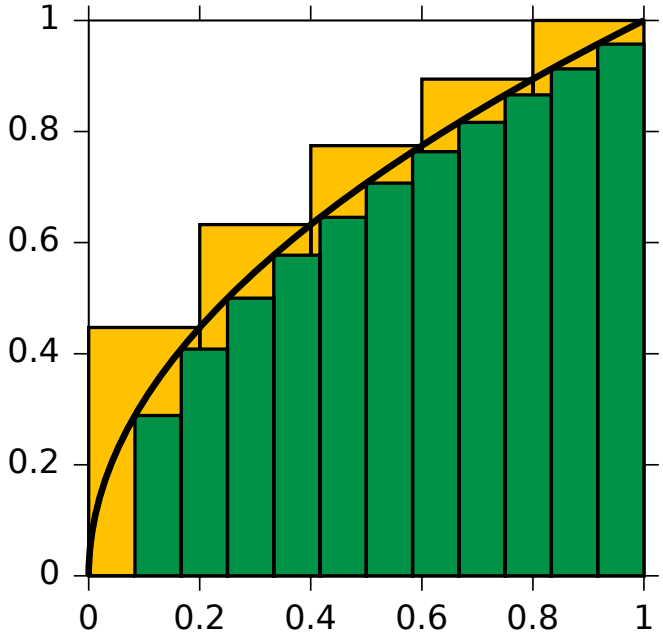
January 4th, 2012

Calculus ???



What is a *Calculus*?

- *Integral calculus*: A collection of methods for calculating lengths, areas, volumes, and more.[1]

[1] Image from: http://commons.wikimedia.org/wiki/File:Integral_approximations.svg

Course plan

Two tracks: foundations and technique. Topics:

- The Riemann integral (7 weeks)
  - The problem of area; examples.
  - Construction of the integral, basic properties.
  - Techniques of integration
  - Applications
- Parametric curves and polar co-ordinates (1 week)
- The real numbers (4 weeks)
  - Sequences and convergence.
  - Series.
  - Power series and Taylor expansion.

Components of the course

- Classes (MTWF 14:00-15:00)
- Office hours: Monday after class, Friday morning 10-11.
- Problem sets: weekly, mainly conceptual problems.
  - Practice & Supplementary problems.
- Exercize sets: technique.
- Midterm: in-class, Wednesday Feb. 8th.
- Final: usual exam period.

Resources

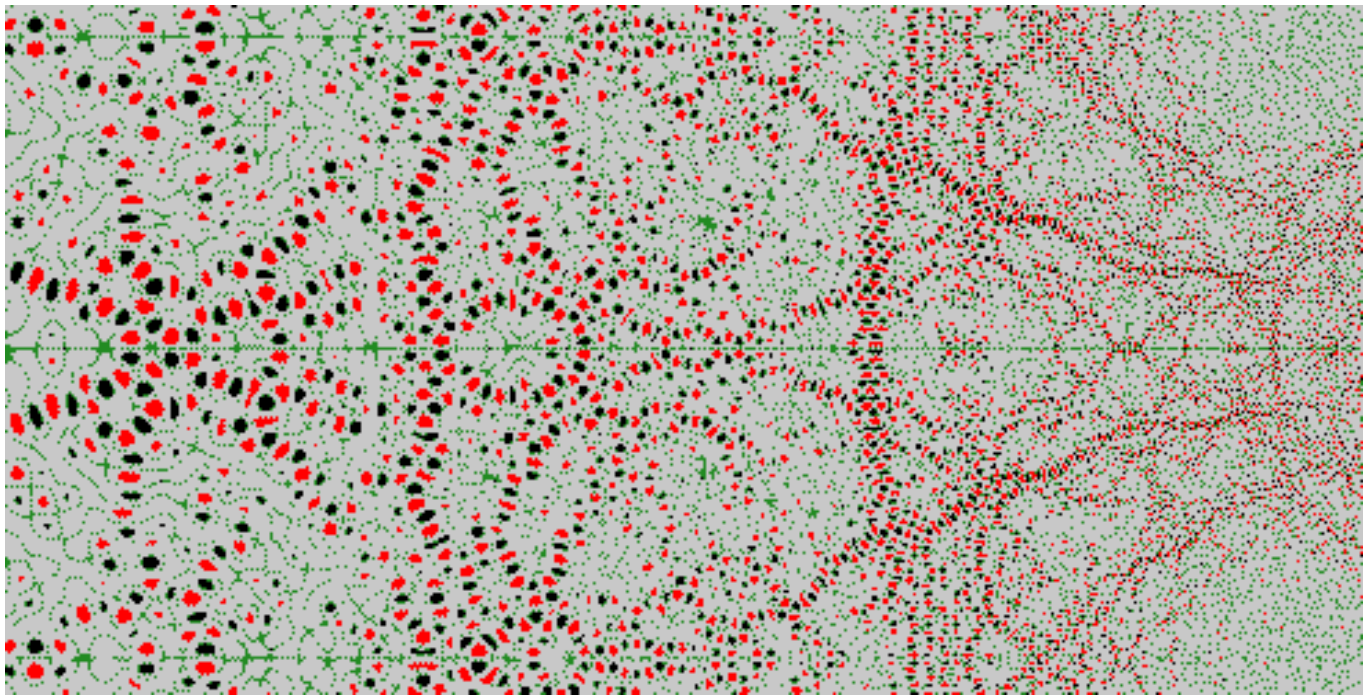
- Instructor
- Math Tutorial Center (basement of LSK building)
- Fellow students
- Textbook
- Definitions: Wikipedia

On the web

- Course website:
  `www.math.ubc.ca/~lior/teaching/1112/121_W12/`
  - Syllabus
  - Slides
  - (Rough) notes
  - Problem sets
- Vista:
  - Solutions
  - Grades
  - WebWork
- WebWork:
  - automated exercize sets

About me

- Lior Silberman (Li'$\overline{\text{or}}$ $\overline{\text{Zil}}$berman)
- Email: `lior@math.ubc.ca`, Office: MATH 229B.
- Work: Number Theory, Random Structures.



Goals, a.k.a. what's hard in this course?

- Mathematical technique:
  - Calculating areas, volumes and lengths
  - Finding asymptotics, and determining convergence.
- Conceptual goals:
  - The "Divide and sum" approach.
  - Abstract thinking.