Math 101,
Lecture 1

Lior Silberman

Calculus???

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2 Learning
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3 About me

# Math 101: Integral Calculus
## Section 206, Lecture 1

Lior Silberman[1]

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http://www.math.ubc.ca/~lior/teaching/1617/101_W17/

# Calculus ???
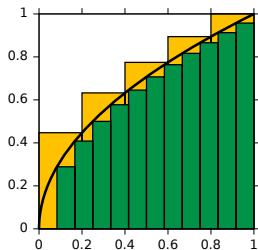
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What is a *Calculus*?

- *Integral calculus*: A collection of methods for calculating lengths, areas, volumes, and more.[2]
- Language to describe nature

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[2]Image due to KSmrq from:
http://commons.wikimedia.org/wiki/File:Integral_approximations.svg

# Galileo says

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*Philosophy is written in that great book (I mean the universe) ... but the book cannot be understood unless one first learns the language and the symbols in which it is written. This book is written in the mathematical language ... without whose help it is impossible to comprehend a single word of it; without which one wanders in vain through a dark labyrinth.*

*— Galileo Galilei, The Assayer, 1623.*

... the new mathematics is a sort of supplement to language, affording a means of thought about form and quantity and a means of expression, more exact, compact, and ready than ordinary language. The great body of physical science, a great deal of the essential fact of financial science, and endless social and political problems are only accessible and only thinkable to those who have had a sound training in mathematical analysis, and the time may not be very remote when it will be understood that for complete initiation as an efficient citizen ... it is as necessary to be able to compute, to think in averages and maxima and minima, as it is now to be able to read and write.

— *HG Wells, Mankind in the Making, 1903.*

# Today's Goals

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4. Math: The area problem

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# Course plan

- Integration and the Riemann Integral;
- Techniques of integration;
- Applications of Integration;
- Sequences and Series, power series.

# Components of the course

- Classes (MWF 14:00-15:00, MATH 100)
- Weekly online homework (due 9pm Wednesdays) [10%]
    - First WebWork due January 11
- Offline homework (not for submission)
- Biweekly quizzes (alternating Fridays) [40%]
    - First quiz January 20
- Final exam [50%]
- Piazza, Office hours

# Put in the work

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- Read before class
- Stay caught up
- Put in the hours (2 for 1)
- Online homework: don't take the easy way out.
- Offline homework: these are like quizzes and finals.
- Mindful practice.

# Using class time

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*Abducted by an alien circus company,
Professor Doyle is forced to write
calculus equations in centre ring.*

(Gary Larson, "The Far Side", 15/9/1992)

- Learn *ideas* not solutions.
    - Pay attention to *cues*
    - (mostly) Ignore algebra

- *Solve worksheet problems* to trigger *thinking*.
- **_ASK QUESTIONS!!_**

- Piazza
- Office hours: Tuesdays 10-11, Wednesdays 11-12:30.
- Math Learning Centre
- AMS Tutoring

# About me

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- Work: Number Theory, Random Structures, . . .