lessons learnt:
the joys of teaching math online
in summer 2020

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FYMSiC Online Teaching Meet Up (June 29th)

for differential calculus and integral calculus . . .

this summer term . . .

- synchronous lectures (n = 140) through Zoom which are posted on YouTube, as well my lecture notes are posted on the learning management system
- instructor office hours are synchronous through Zoom either before or after lecture
- no TA office hours, but TAs monitor Piazza

for differential calculus and integral calculus . . .

Course Assessments:

Twelve (12) Tutorial Activities (best 10 out of 12 will count, each worth 1%)	10%
Five (5) Term Tests (each worth 11%)	55%
Final Examination	35%
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Total	100%

for differential calculus and integral calculus . . .

some notes on assessments:

- miss four or five term tests - ORAL EXAM TIME :D
- similar questions as face-to-face, but less computation and more thinking
- academic integrity splashed everywhere
  - talk to students about academic integrity regularly …

MAT135H Differential Calculus - Term Test No.1 Challenging

The calculation below has an error.   Average: 2.4/4   Median: 3/4

Solve the equation $\sqrt{(x-1)^2 + 4x} = 3x + 4$ for x.

$$\sqrt{(x-1)^2 + 4x} = 3x + 4 \qquad (1)$$
$$\sqrt{(x+1)^2} = 3x + 4 \qquad (2)$$
$$x + 1 = 3x + 4 \qquad (3)$$
$$x = -\frac{3}{2} \qquad (4)$$

Complete each part:

Part (A) Identify the line, by its number, which contains the error.

Part (B) State the mathematical statement or rule that the line which you identified in Part (A) uses incorrectly.

Part (C) Starting with the line containing the error, modify the calculation to make it correct. You must clearly and coherently justify your work.

MAT136H Integral Calculus - Term Test No.1   Challenging

Version 1

Let $q(x) =|| \, x - 4 \, | -1 \, |$.

Part (A): Graph the function $q(x)$. You may use any software (i.e., www.desmos.com). [No marks are given for the graph.] Then, use the graph to write $q(x)$ as a piecewise function.

Part (B): Use Part (A) and the Fundamental Theorem of Calculus to find the integral:

$$\int_{-1}^{4} q(x)dx$$

Simplify your final answer, and do not write it as a decimal number. Circle your final answer.

You must clearly and coherently justify your work. You cannot provide only the final answer.

MAT136H Integral Calculus - Term Test No.2   Medium

Version 4

Find the area of the region above the x-axis bounded by $y = \dfrac{1}{x^4}$, $x = 1$, and $x = m$, where m is greater than 1. Your final answer will include m. What happens to this area as $m \to \infty$?

You must clearly and coherently justify your work. You cannot provide only the final answer. Circle your final answer.

tips and advice . . .

- have thick skin and stand your ground
  - entitlement through the roof
  - bullied on Piazza and Reddit
- set expectations for the course clearly, but also for yourself
- student feedback throughout the course
- start early in your preparation, attend online teaching workshops or webinars, network with other colleagues, and absorb as much as you can
- be lively and vibrant when lecturing or recording a video

what i like about synchronous lecturing . . .

- Zoom chat box during lecture!
  - i get to learn about my students' weaknesses in their math background and about them
- my iPad with the app Goodnotes 5
- my personality radiates more online than in person
- i cover more examples than usual
- student engagement in the course
  - Zoom polling, verbally, on Piazza, group chats

student feedback about lecturing . . .

- I really like Andie because she is so enthusiastic and makes waking up on Tuesdays and Thursdays to do math exciting!
- You are doing really well Andie and your interaction with us as students is like no other professor i have seen so far in university and it is a very welcoming educational experience
- I really like how my prof makes everything so chill and funny. I used to hate calc but after attending her lecture I think I'm in love with love calc cuz of how she makes everything so fun.
- After trying to take this course many times and failing, I am feeling optimistic about this time especially with Andie. I have heard so many great things about her and she has not let me down!
- Andie is probably one of the best profs that I've had so far in my university experience, you can tell she genuinely cares about us and wants us to have a firm grasp on the material.

we are not the only ones feeling the pain . . .

high school teachers are echoing the same things

reach out anytime! :)

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