

Week 0: Info + Review

Course Information

- See CCLE for Syllabus and course information if you haven't already. Zoom links are there.
- Office Hours: 1pm Tuesday (Tentative)
- Email: Ben.Szczery@math.ucla.edu

Zoom Etiquette

- Stay muted unless speaking in general meeting (not necessary in Breakout Rooms)
- I will ask someone to monitor chat for me and let me know if there are any questions I missed each week.

Format of these discussions:

(1) Demonstration (10-15 minutes)

I will go over some examples, or remind you about things from lecture

(2) Group Work (25-35 minutes)

Each week I will have a few problems for everyone to go over in groups. We will use Breakout rooms.

Learning Math is best done by doing, and this is the time

to get your hands dirty.

(3) Questions + Discussion (5-10 minutes)

This is where I will close the breakout rooms and we will discuss the problems together and go over any questions people found especially difficult.

Recording These discussion sections will be recorded each week for those in different time zones that can't make it. I will pause the recording during group work, so feel free to ask questions then if you don't want to do so while being recorded. These will only be available through CCLE.

Questions?

Overview:

A function is some rule or assignment that takes an input and gives an output

$$\{ \text{inputs} \} \xrightarrow{f} \{ \text{outputs} \}.$$

In 31A/B we look at functions with inputs and outputs real numbers. i.e., $f(x) = x^2 + 4$ is a function that if we input the real number $x=2$, it outputs $f(2) = 2^2 + 4 = 8$. We then do calculus on these functions.

In 32A/B, we generalise this and look at functions that can input/output **vectors** and do calculus on these functions.

Vectors can be thought of as:

- points in the plane \mathbb{R}^2 , or space \mathbb{R}^3
- arrows with specified length and direction in \mathbb{R}^2 or \mathbb{R}^3 .
- Pairs or triples of numbers.

So we will be looking at functions like ones you input a number in and get two outputs, or you input 3 numbers and get 1 out.

Most of 32A/B can be thought of taking what was done in 31A/B and extending it to functions that involve vectors.

