Week 0 Teaching Plan

Info:

- See CCLE for the course information!
- Office hours: Thursdays 1-2pm
- Email: ben.szczesny@math.ucla.edu

Zoom Rules

(1) Stay Muted unless speaking in the main room

(2) Be respectful

(3) I'll need someone each section to monitor chat for me and let me know if there's any questions.

How these sections are going to work:

(1) Demonstration (5-15 minutes)

I will go over an example or remind you about something from lecture

(2) Group work! 30-40 min

We will split into breakout rooms and do a worksheet in groups.

(3) Discussion (5-10 minutes)

I will close the breakout rooms and we will review the work sheet together.

Reminders for this week:

Sets: Sets are written with curly brackets $\{\cdots\}$ and these are "bags of things".

For example: the set $\{(x,y) \mid x^2+y^2=1\}$

↑ read as "such that".

This is the set of all points (x,y) such that $x^2+y^2=1$. i.e the circle in $\mathbb{R}^2$

functions These are "rules" that take inputs and spit out outputs.

i.e $f(x) = x^2+2$ is the function that if you input $x=2$ then it outputs $f(2) = 2^2+2=6$.

piecewise functions

Functions written like $f(x) = \begin{cases} -x & \text{for } x \leq 0 \\ x^2 & \text{for } x > 0 \end{cases}$

are "piecewise". ie, the rule assigning values is split up for different values of x.

ie, $f(-1) = -(-1) = 1$

$$f(2) = (2)^2 = 4.$$

Equations expressions with equal signs. These are **not** the same thing as a function but are related.

ie, if $f(x) = x^2 + 2$, then $f(x)$ by itself isn't an equation but $y = f(x)$ is an equation that uses the function f.

Graphing equations and functions

To graph an equation in two variables x, y is to draw on an xy-plane what pairs when put into the equation make it hold true.

For example: Take $y^2 + x^2 = 1$. Then $(0,1)$ is on the graph as $x=0$, $y=1$ in it gives $1^2 + 0^2 = 1$ which is true.

while $(1,1)$ isn't on the graph as $1^2 + 1^2 = 2 \neq 1$.

we are drawing the solution set to an equation.

Graphing a function is graphing the equation $y = f(x)$.