# Welcome to Calculus I!

Introductions

a) Introduce yourself: preferred name, pronouns, anything else important to your identity...

b) Something you've watched, read, or listened to recently

How do we learn?

1. Tell a short (1 minute) story about something challenging that you have learned in your lifetime. For example: How to play the oboe, how to bake a cake, how to ride a unicycle...
2. As a group, discuss how you each learned that skill.
   - What did the learning process look like for you?
   - How does anyone go about learning something new?
   - What activities did you engage in that helped you learn?
   - What held you back?
   - What is the value of making mistakes in the learning process?

How do we create a safe environment where risk taking is encouraged and productive failure is valued?

One answer: growth mindset

"Individuals who believe their talents can be developed (through hard work, good strategies, and input from others) have a growth mindset. They tend to achieve more than those with a more fixed mindset (those who believe their talents are innate gifts). This is because they worry less about looking smart and they put more energy into learning."

Video

I want you to succeed!

I want you to learn.

I want you to productively struggle.

I want you to grow.

Logistics

1. Check out the class moodle.
2. Order the Active Calculus book.
3. Log in to WeBWork

Types of assignments

- Before class: read section and complete preview activities
- During class: work on activities in groups with assistance
- After class: finish activities, and optional WeBWork or Challenge problems
- Every week: do a meta-cognition exercises and self assessments.

Course Assessment

I use an ungrading system. The short version is that you will continually self reflect on your learning and in consultation with me will tell me what grade you should get at the end of the semester.

You will receive lots of feedback but no grades. The emphasis will always be on learning, not earning points. Your best path forward is to focus on learning.

I will provide guidance for how to assess and evaluate your learning but will give you freedom to do so efficiently and meaningfully.

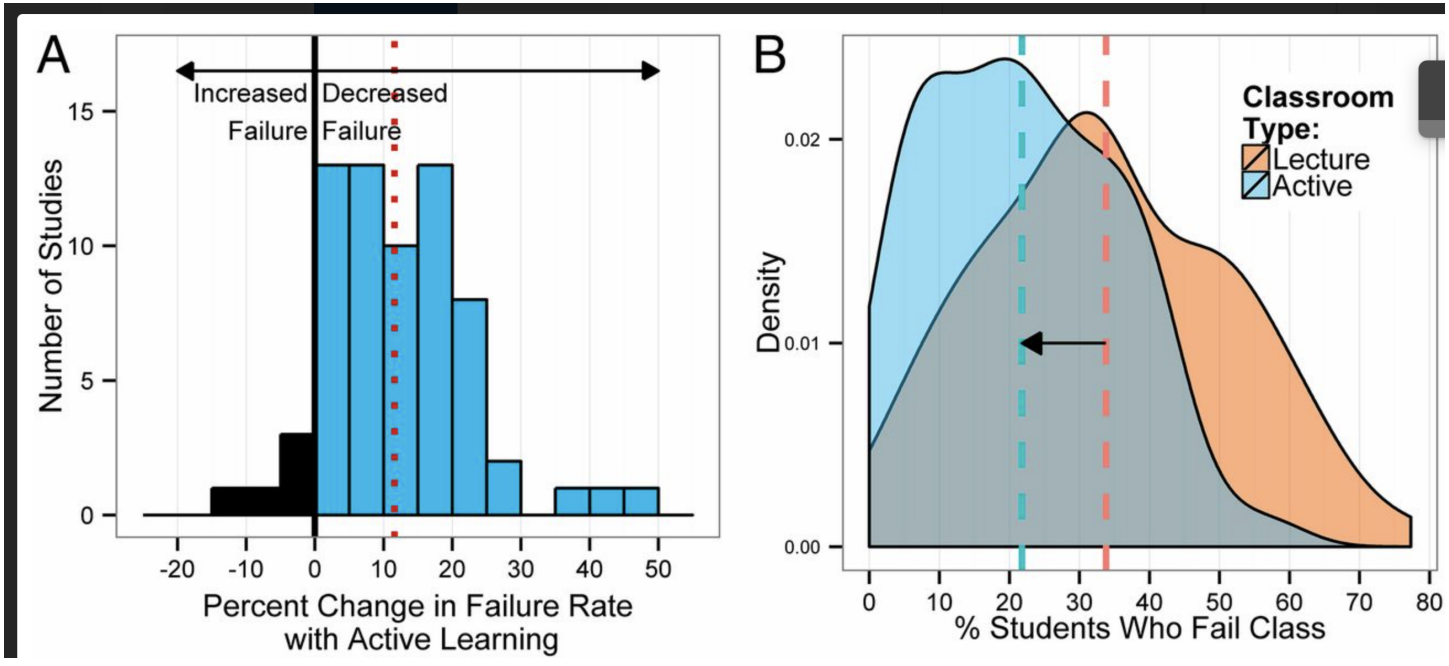
Things that will feel different:

1. We will be actively working on math in class instead of lecturing.
2. You will actively read the book, watch videos, and engage with material before class.
3. I will ask you to do meta-cognition which might feel strange at first.
4. I will guide your learning but I am trusting you to make the most of it. This requires you to take leadership in your own learning.

# Why I teach this way

It is evidence based.

"These results indicate that average examination scores improved by about 6% in active learning sections, and that students in classes with traditional lecturing were 1.5 times more likely to fail than were students in classes with active learning. "



It also more equitable.

“a growing body of research shows that there are specific teaching strategies that (on average) improve learning outcomes for all students and also (on average) improve learning outcomes disproportionately for students who have been historically excluded from STEM.”

"The authors found it ethically questionable to make students attend lecture based course given all that we know about how ineffective they are. If the studies had been medical experiments they probably would have been stopped in the middle because the treatment being tested was clearly more beneficial."

You learn math by doing math.

Focusing on long term retention and learning is more valuable than short term cramming and doing the easiest task available.

Productive struggle is essential and it works.

With all this said I will try to meet you where you are. I will be posting videos and am happy to "lecture" at you in office hours.

Before next class:

- Read the Daily Prep for section 1.1.
- Complete the "Tell me about yourself" exercise.
- Complete the "Reading a Math Textbook" exercise.
- Complete the "Group work" exercise.
- Read the Introduction in Section 1.1 in Active Calculus and do the Preview Activity
- Read the the rest of Section 1.1.

I want you to succeed!

Please, please, please reach out to me for support!