

# MA 109 D1&D2 Lecture 1

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# Welcome to IIT Bombay

Welcome to IIT Bombay! Press the record button!

All lectures will be recorded. The recordings will be uploaded to a drive (either in Zoom or in Google Drive). I will send you a link (on moodle) and you can download the videos whenever convenient.

Slides of the lectures will also be uploaded to moodle site for MA 109 and (for some time) my website.

Moodle website:

<http://moodle.iitb.ac.in/login/index.php>

My website:

<http://www.math.iitb.ac.in/~ravir/ma109index.html>

The tutorial booklet for the course has been uploaded on the moodle site MA109-2020-1 and on my website.

## Organisation of the course: Lectures

Here is the current plan. We will see how well it goes and modify it if necessary.

Common lectures on Monday 14:00, Tuesday 8:30 and Thursday at 14:00 for D1 and D2.

Idea: Try to finish each week's material on Monday and Tuesday (this may not work!). Use Thursday plus the other slots in the time table where you see D1A, D1B, D2A, D2B for more interactive sessions as and when needed.

You will have tutorials on Wednesdays at 2:00 p.m. for one hour. These will be in batches of 40-45. A senior student (TA) who has done this course already will lead problem solving sessions.

## Organisation of the course: Evaluation

We plan to have weekly short quizzes for about 10-15 minutes (worth about 25% of the total score?)

And maybe one longer quiz (one hour?).

And a final exam (worth about 50% of the total score?).

Everything will depend on how smoothly things go.

Quizzes and exams will be proctored, that is, you will have to keep your camera on at all times so that we can see you. IIT has detailed protocols on this which we will communicate to you.

We will try out quizzes on moodle.

We will also be trying out a platform called SAFE.

Advantages of SAFE: You do not need continuous internet connectivity!

Disadvantages: One cannot assign questions randomly. Maths formulas may be a problem.

# Course objectives

Welcome to IIT Bombay.

- ▶ To help the students achieve a better and more rigorous understanding of the calculus of one variable.
- ▶ To introduce ideas and theorems in the calculus of several variables (differentiations).
- ▶ To help students achieve a working knowledge of the tools and techniques of the calculus of several variables in view of the applications they are likely to encounter in the future.

For details about the syllabus, tutorials, assignments, quizzes, exams and procedures for evaluation please refer to the course booklet. The course booklet can also be found on moodle:

The emphasis of this course will be on the underlying ideas and methods rather than very intricate problem solving involving formal manipulations (of course, there will be plenty of problems - just not many with lots of algebra tricks). The aim is to get you to think about calculus, in particular, and mathematics in general.

Ask questions! There is a good chance that if you don't understand something, many other people also do not understand it.

Of course, asking questions may be a bit difficult in an online class, but we will try and make things as interactive as possible. On Zoom you can "raise your hand".

If there are mistakes in the slides, please let me know - you can send me an email on moodle, or directly.

Basic Question:

Your computer does not have in-built software that calculates trigonometric functions. How will you program it to give you the value of  $\sin x$  if you input a value for  $x$ ?

If your program outputs a value to 8 decimal places if you input an  $x$  (which can also have upto 8 decimal places), how can you guarantee that this value is accurate?

What is the degree of accuracy?