MST20010:

Comparison with MST10030 + How to work

Comparison with MST10030

Most of you took MST10030 as a previous algebra course.

Its content was mostly (but not entirely):

- Computational techniques.
- Learn them and apply them to solve exercises.
- Not much focus on the proofs of these techniques (but they were given in class).

Comparison with MST10030

MST20010 starts moving in the direction of what is more commonly seeen as "university maths":

- The focus is much more on proofs.

If the same approach had been used for MST10030, the focus would have been:

- How to develop the computational techniques and how to justify them.

(And much less on "simply" applying them.)

Content of MST20010

- Approx. 30%: Techniques that you should learn to apply in order to solve particular type of questions.

- Approx. 70%: About proofs.
  In other words, about how you can produce a reasoning in order to justify that a statement is true.

  Obviously, you will only be asked to do this in short and simple cases, but it takes time and practice to shift to this type of maths.

How to work?

- You should (perfectly) know the content of the notes, and all the results. Nothing new there.

- What is maybe less usual: you should study the proofs extremely carefully.

  They are were you will see how to put together an argument that justifies a result. Since you will be asked to do this, proofs are at least as important as the results in this course. You need to know them, understand them, be able to do most of them, and be able to explain them to someone.

  The proofs seen in class are usually harder than what you will be asked to do, but if you study them carefully you will see that they are made out of smaller arguments or techniques (kind of building blocks) that can be reused or can serve as inspiration for solving the exercises or exam questions.

How to work?

- On the notes / videos:

  First you need to study the content in order to understand it, and in particular the proofs.

  It takes time, easily one or more hours of independent study each week on top of the scheduled 2 hours reserved for lecture time. Re-read the notes with pen and paper to follow the arguments, re-watch the relevant parts of the videos when needed, etc.

  And then **ask your questions in class!** This is very important.

  The more you manage to do it, the more likely you are to progress well (try to forget about being shy). Not getting things and making mistakes is a normal part of the learning process, and I can spend time giving more explanations or examples.

How to work?

- The exercise sheets / tutorials:

  Same strategy: Work seriously (and for a long time) on the exercises *before* the tutorial.

  And based on this: **ask your questions** to the tutor.

  Some of the exercises will be about applying techniques seen in class, but most of them will be about justifying some statements, i.e., producing your own simple proofs. It is not always easy (actually, it is often not easy, at least at first; it is normal). Keep at it, spend time on it to see what progress you make, what seems to work, or what does not seem to work.

Also available and useful

- Office hours (in-person or on Zoom):

  Use them if you really feel uncomfortable asking in class, or for longer questions / general problems. I really encourage you. Come as a group if you prefer.

  No fixed time (I don't know when you are free), so we just need to agree on a time by email.

- The Math Support Centre. Don't be afraid to talk to them, they are extremely useful (and they are there precisely for this). We very much encourage you to use them when needed!

- The tutors.