

Department of Mathematics
Maths 190 and Maths 190G
Lecture 1 Summary

In the first two lectures of this course we illustrate two important observations:

- Mathematics involves logical and creative thinking.
- Thinking can be fun.

In Lecture 1 there are two main examples:

Example 1: Dodge Ball (Story 5, Chapter 1, The Heart of Mathematics). Instructions for playing this game are given on the handout “Playing Dodge Ball”. This simple game contains the key idea for proving that some sorts of infinity are bigger than others. We return to this idea later in the course.

Example 2: Dropping Trou (Story 4, Chapter 1, The Heart of Mathematics). Try the following at home. Tie your feet together with a piece of rope about 1.5m long. Then without removing the rope, try to take your pants off, turn them inside out, and put them back on so that you, the rope, and your pants are exactly the same as they were at the start, except that your pants are inside out. This intriguing activity shows that surprising outcomes arise when we bend and contort objects and space. We study contortions of space in more depth later in the course.

Before you come to the next lecture: You should spend an hour or two thinking and reading about the ideas presented in the lecture. You should:

- Read Story 4 and Story 5 from Section 1.1 of the textbook, ‘The Heart of Mathematics’. You can also read about Story 4 and Story 5 in Section 1.2 of the text.
- Read the Study Guide for the course. This contains a lot of important information about the course that you need to know if you want to do well in the course.

Other activities you could do if you have time are:

- Play Dodge Ball with a friend or family member who is not enrolled in this course. Once the other person gets the idea of the game, see if they can work out the winning strategy. If not, try to explain it to them.
- Try the Dropping Trou example in a private place. Once you can do the trick easily, amaze a good friend or family member by demonstrating your new-found abilities.

Handouts given at this lecture:

- Maths 190 and Maths 190G Study Guide
- Playing Dodge Ball
- Lecture 1 Summary (this handout)