

I can't make your office hours because I teach during them but I do have some questions. I don't feel like making an appointment or anything, as I'm sure you can answer all of these questions via email.

1. I don't understand how the topology of the extended real numbers $([-\infty, \infty])$ works; on \mathbb{R} balls around a point look like open intervals, but what does a ball of any radius around ∞ look like? Does topology work on this set, or am I just SOL?
2. I saw a different definition of measurable in another context, using an "inner measure" (it said that a set is measurable if its inner and outer measures are the same). An exercise we did in the homework (it was the "Prove this thing in Royden" one) showed that the definition I saw there and the definition we are given in class are equivalent. However, the proof I wrote for this exercise felt convoluted and unintuitive. Could you explain why these two definitions "should be" equivalent in an intuitive manner?

If you are wondering why there are not more questions; there are quite a few things involving the Lebesgue Integral that I don't understand yet, but I feel like I can understand them if I keep bashing my head against them, and I'd rather try that first. The above two, though, are ones I feel like I have no hope of getting alone.

-Max