

Dror Bar-Natan: Classes: 2004-05: Math 1300Y - Topology:

Homework Assignment 2

Assigned Thursday October 7; due Thursday October 21, 3PM, in class

Required reading. Read, reread and reread your notes to this point, and make sure that you really, really really, really really really understand everything in them. Do the same every week! Also, read all of Munkres chapter 3.

Solve the following problems. (But submit only the underlined ones). In Munkres' book, problems 6, 7 on page 152, problems 1, 2, 3, 8, 10 on pages 157–158 and problems 1, 4, 5, 7, 8 on pages 170–171.

Just for fun.

1. Can you find a connected subset W of \mathbb{R}^2 which is pathwise totally disconnected (i.e., there is no $x \neq y \in W$ that can be connected via a continuous path)?
2. Without referring to the famed “Tychonoff Theorem”, prove that $[0, 1]^{\mathbb{N}}$ is compact in the product topology. (Is it compact in the box topology?)