

## Topology, fall 2022

### Homework 5, due Thursday October 20.

Read Munkres sections §23, 24 (only pages 159-160), §26, 27.

I. Exercise 2 on page 158 (hint: look at the function  $f(x) - f(-x)$  and apply the Intermediate Value Theorem from that section).

II-III. Exercises 8abcd and 10 on page 158.

IV. Exercise 1 on page 162.

V-VII. Exercises 2, 3, 4 on page 171.

VIII. Exercise 2abcd on page 177. (Hint for b: use Theorem 27.4).

*Additional practice problems (do not submit):*

Read about the topologist's sine curve (Example 7 page 156) - it's another example, besides the ordered square, of a connected but not a path-connected space.

Exercise 1a-c on pages 157. Exercise 3 on page 158 (is there a way to apply the Intermediate Value Theorem)? Exercise 9 on page 158.

Exercise 2 on page 162.

Exercise 1 on page 170.

Exercise 6 on page 178 summarizes some of the properties of the Cantor set.