

Reading:

Munkres, §53(pp. 335–337), §54. (Pages 335–337 were assigned last week, but due to a typo it said §52 instead of §53.)

Weekly Report:

Due Sunday, August 12.

Practice Problems:

Prepare these for discussion in class on Wednesday, August 15. They do not need to be written up for a grade.

1. Munkres, §52, #1.
2. Munkres, §52, #4.
3. Munkres, §52, #5.
4. Consider the map $F: \mathbb{R}^2 \rightarrow \mathbb{S}^2$ given by

$$F(x, y) = \left(\frac{2x}{x^2 + y^2 + 1}, \frac{2y}{x^2 + y^2 + 1}, \frac{x^2 + y^2 - 1}{x^2 + y^2 + 1} \right).$$

- (a) Show that F defines a homeomorphism between \mathbb{R}^2 and $\mathbb{S}^2 - \{(0, 0, 1)\}$.
 - (b) If $f: I \rightarrow \mathbb{S}^2$ is a path that does not pass through $(0, 0, 1)$, show that f is path homotopic to a constant path.
5. Below are 26 topological subspaces of the plane. Classify them up to homeomorphism (i.e., divide them into groups such that all the spaces in a given group are homeomorphic to each other), and decide which ones are simply connected. No proofs necessary.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Final Portfolio:

Due Wednesday, August 15.

Write up final drafts of all the portfolio problems that have been assigned. Bring one copy of each to class on Wednesday, together with all previous drafts and comments.

Final Exam:

In class Friday, August 17.