Math 9100 Homework 1

Due Thursday, 1/30/25

1. Exercise 1.1.2 in Kassel–Turaev.

2. Exercise 1.1.5 in Kassel–Turaev.

3. Modify the proof of the Alexander Lemma to show that $\mathrm{Mod}(D, 1)$ is trivial.

4. Let D be a disk containing distinguished points $x_1, \ldots, x_n$. Prove that the projection $p\colon \mathrm{Homeo}^+(D) \to \widehat{C}_n(D)$ defined by $p(f) = (f(x_1), \ldots, f(x_n))$ is a fiber bundle with fiber $\mathrm{PHomeo}^+(D, n)$.