

Homework 7

1. Prove that the fundamental group of the Klein bottle is not commutative.
2. Classify homeomorphisms $\mathbb{R}^1 \rightarrow \mathbb{R}^1$ up to isotopy.
3. Classify homeomorphisms $S^1 \rightarrow S^1$ up to isotopy.
4. Find homotopy equivalent but non-homeomorphic compact manifolds. Prove that they have these properties.
5. Prove that there is no covering of S^2 by the Klein bottle.