Math 9500 Homework 2

Due Thursday, 10/20/22

1. Let $V = D^2 \times S^1$ be the solid torus. The *mapping class group* $MCG(V)$ is the group of orientation-preserving homeomorphisms of V, up to isotopy. Compute, with proof, the algebraic structure of $MCG(V)$. You should include a description of how each generator acts on V.

    Hint: You may use without proof the standard fact that $MCG(T^2) \cong SL(2, \mathbb{Z})$, acting by linear transformations on the universal cover $\mathbb{R}^2$. If a homeomorphism of $\partial V = T^2$ extends to V, where must the meridian slope be mapped?

2. Exercise 10.2.7 in Martelli.

3. Exercise 10.2.11 in Martelli.