

HOMEWORK 5 – 2019

Exercise 1. Prove that the space which arises by glueing the Moebius band to the boundary of a hole in the sphere is the projektive plane.

Exercise 2. Prove that the plane X is not homeomorphic with the union Y of two planes which have a line as an intersection. Hint: Compute homology groups of pairs $(X, X - \{p\})$ and $(Y, Y - \{q\})$, where $p \in X$ and $q \in Y$ are points. Use excision theorem.