HOMEWORK 6

Exercise 1. Let X be the following space: Take the edges of tetrahedron with vertices v_0, v_1, v_2, v_3 and add the centre p of the tetrahedron together with all the triangles $[v_i, v_j, p]$, $0 \leq i < j \leq 3$.

Compute the local homology groups of X with respect to the point p, i.e. compute $H_*(X, X - \{p\})$.

Exercise 2. Prove that the space which arises by gluing Möbius band into a hole of the sphere is the projective plane. Compute its homology and cohomology with $\mathbb{Z}/2$ and $\mathbb{Z}/5$ coefficients.