

**Homework exercises Algebraic topology, hand in before class on
19-9-2018**

Exercise 1.

Compute $H_1(X; \mathbb{C})$ and $H_2(X; \mathbb{C})$ where X is the finite set $\{N, W, Z, O\}$ whose topology has basis $\{\{N\}, \{Z\}, \{N, Z, O\}, \{N, Z, W\}\}$. You may use the excision and homotopy invariance properties mentioned in lecture 3 of the notes.

Hint. Look at the computation of the homology of spheres.

Exercise 2.

Find a finite topological space X such that $H_2(X; \mathbb{Z})$ is non-trivial. Can you do it with even less points? What is the minimal cardinality of X in such an example?