HOMEWORK 5 − 2024

The seconb exercise is voluntary.

Exercise 1. Construct a CW-complex X with the following homology groups:
$$H_n(X) = \begin{cases} \mathbb{Z}, & \text{for } n = 0; \\ \mathbb{Z} \oplus \mathbb{Z}_{12}, & \text{for } n = 2024; \\ \mathbb{Z}_6, & \text{for } n = 2023; \\ 0, & \text{otherwise.} \end{cases}$$

Exercise 2. Let X and Y be connected CW complexes. Describe reduced cohomology ring $\bar{H}^*(X \vee Y; \mathbb{Z})$ in terms of cohomology rings $\bar{H}^*(X; \mathbb{Z})$ and $\bar{H}^*(Y; \mathbb{Z})$.