

MAT 541: Algebraic Topology

Suggested Problems for Week 3

You may hand in solutions to at *most* 2 problems every 2 weeks and no later than 2 weeks after the necessary material for them is covered in class.

From Munkres: 6.4, 6.6, 6.8, 10.2, 9.2, 9.3, 9.6, 23.5, 24.1, 24.4, 24.7, 25.1, 25.2, 8.1/25.4

Problem F

Let K be a simplicial complex. For each $n \in \mathbb{Z}^{\geq 0}$, denote by K^n the n -skeleton of K (all simplices in K of dimension at most n). For $p \in \mathbb{Z}$, describe the R -modules

$$H_p(K^n, K^{n-1}; R), \quad \ker(H_p(K^n; R) \rightarrow H_p(K; R)), \quad \text{Im}(H_p(K^n; R) \rightarrow H_p(K; R)).$$

This problem is from the midterm in MIT's 18.905 in Fall 1996 taught by F. Peterson.