MAT 542: Algebraic Topology, Fall 2016

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 simplicies in K of dimension at most n). For $p \in \mathbb{Z}$, describe the R-modules

$$H_p\big(K^n, K^{n-1}; R\big), \quad \ker\big(H_p(K^n; R) \longrightarrow H_p(K; R)\big), \quad \operatorname{Im}\big(H_p(K^n; R) \longrightarrow H_p(K; R)\big).$$

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