

MTH 961: Suggested Exercises for Week 6

1. Do exercise 4.3.24 in Hatcher.
2. Let \mathbf{k} be a field of odd characteristic. Show that for any n , $H_*(K(\mathbb{Z}_2, n), \mathbf{k})$ is trivial.
3. Give an example to show that in a fibration $F \rightarrow E \rightarrow B$, the condition that $\pi_1(B)$ acts trivially on $H_*(F)$ is necessary for the existence of a Serre spectral sequence. (In the more general case, the E^2 page is the homology of the base with a *local coefficient system*.)
4. Compute the homology of the homotopy fiber of a map $S^k \rightarrow S^k$ of degree n .
5. Verify that the derived couple of an exact couple is still an exact couple.