

## Homework 8

Due Monday, March 12, 2011

1. Let  $X = S^2$ , let  $A \subset X$  consist of two points, and let  $i : A \rightarrow X$  be the inclusion. In earlier homework we computed  $\pi_1(X/A)$ .
  - (a) What is  $H_0(A)$ ?  $H_0(X)$ ? The induced map  $i_* : H_0(A) \rightarrow H_0(X)$ ? Its kernel?
  - (b) Compute the homology of  $X/A$  using the long exact sequence of the pair.
2. Show that the antipodal map  $S^n \rightarrow S^n$  is homotopic to the identity if  $n$  is odd.
3. What is one question you have about last week's lectures?