

**INTRO TO ALGEBRAIC TOPOLOGY**  
**HOMEWORK 9 DUE APRIL 16**

Turn in the following:

- (1) Let  $X$  be the Möbius band, and  $A$  the boundary of  $X$ .
  - (a) Construct a  $\Delta$ -complex structure on  $X$ .
  - (b) Compute  $H_n^\Delta(X)$  and  $H_n^\Delta(A)$ . (You should use the  $\Delta$ -complex structure that  $A$  inherits from  $X$ .)
  - (c) Let  $i: A \rightarrow X$  denote inclusion. Compute  $i_*: H_n^\Delta(A) \rightarrow H_n^\Delta(X)$  for all  $n$ .
  - (d) Use your answer to part (c) and the long exact sequence of the pair  $(X, A)$  to compute  $H_n(X, A)$ .
- (2) Hatcher Exercise 2.1.16 (p. 132)
- (3) Hatcher Exercise 2.1.17 (p. 132)
- (4) Hatcher Exercise 2.1.20 (p. 132)
- (5) Hatcher Exercise 2.1.29 (p. 133)