

**Spring 2021, Math 621: Preliminary Problem Set 13**  
**Due: Thursday, April 22nd, 2021**  
**The Long Exact Sequence of Homology**

**Preliminary problems.** These should be submitted to Gradescope before Thursday discussion.

(P1) Let  $X = I$  and  $A = \{0, 1\}$ . Locate  $c \in C_1(X; \mathbb{Z})$  such that  $[\bar{c}] \in H_1(X, A; \mathbb{Z})$  is nontrivial.