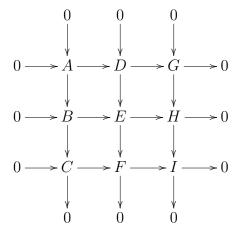
Math 8062 Homework 8

Due Wednesday, 4/4/19

- 1. Page 53, problem 9 (easier using homology!).
- **2.** Page 133, problem 27.
- **3.** Page 133, problem 29.
- 4. Consider the following commutative diagram of Abelian groups:



Prove that if all the rows are exact, and the second and third columns are exact, then the first column is also exact. *Note:* When describing a diagram chase, it is helpful to give "walking directions." For instance: given an element $e \in E$, chase down, then to the right, then up...