

**Math 422: Abstract Algebra II**  
**Homework 3, Due Friday, February 15**

- Chapter 9: # 31, 47, 61.
- Chapter 10: # 3, 6, 18.

In addition, do the following problem:

An abelian group  $G$  is called *injective* if whenever  $H$  is a subgroup of  $G$ , there exists a subgroup  $H'$  of  $G$  such that  $G = H \times H'$  (this is the internal direct product). Prove that the group of integers is not injective.