

## MATH 551 HOMEWORK 5

DUE WEDNESDAY, OCTOBER 12

You are encouraged to work on the homework together, but your final write-up should be your own. Please write down on your homework the name of any collaborators. No late homework will be accepted. “Hungerford I.1.3” means Question 3 in the exercises at the end of Section 1 of Chapter 1.

- (1) II.2.11 a and b
- (2) II.2.12
- (3) A *partition* of  $n \in \mathbb{N}$  is a sequence  $\lambda_1 \geq \lambda_2 \geq \lambda_3 \geq \dots \geq \lambda_k$  where  $\lambda_i \in \mathbb{N}$ ,  $\lambda_i > 0$ , and  $\sum_{i=1}^k \lambda_i = n$ . Show that the conjugacy classes of  $S_n$  correspond to partitions of  $n$ .
- (4) II.4.3
- (5) II.4.8
- (6) How many different necklaces can be made with seven beads, if the beads are of three different colours?