Discrete Mathematical Structures

Assignment 2

1. Show that there is a one-to-one correspondence between the set of partitions of n into odd parts and the set of partitions of n into distinct parts.

2. At a party, 5 guests numbered 1 to 5 check their hats. When they leave, the hats are returned randomly to the guests. How many ways can the hats be returned so that no guest receives their own hat?

3. Write down all distinct left cosets of the cyclic subgroup generated by 3, i.e., $< 3 >$ in Z_{12} under addition modulo 12.

4. Find the number of partitions of 7 into at most 3 parts.

5. You have unlimited coins of denominations 1, 2, and 5. How many ways are there to make change for 10 using these coins?