MATH 4340 – Combinatorial Analysis   Assignment #2
Fall 2013

Instructions

- Answer each question completely; justify your answers.
- This assignment is due at 15:00 on Friday October 4th in Assignment Box #34.

1. Exercise 5.2.60.

2. Exercise 5.2.70.

3. Exercise 5.2.74.

4. How many ways are there to form a sequence of 10 letters from four As, four Bs, four Cs and four Ds

   (a) if each letter must appear at least once in the sequence?

   (b) if each letter must appear an odd number of times in the sequence?

5. Exercise 5.3.12.

6. Exercise 5.3.22.

7. Exercise 5.3.28.

8. Suppose that a teacher sends all six students of his to the chalkboard to work out a math problem. Each student is given a piece of chalk, either white, yellow, or blue.

   (a) If there are unlimited supplies of chalk, and each piece of chalk is considered identical to others of the same colour, then in how many ways can chalk be distributed so that each student receives one piece?

   (b) If there are unlimited supplies of chalk, and each piece of chalk is considered identical to others of the same colour, then in how many ways can six pieces of chalk be distributed among the students? (some students might get no chalk)

   (c) If there are only two pieces of chalk of each colour, then in how many ways can the six pieces of chalk be distributed among the students?

9. Suppose that five different classes need to be taught, and there are three available instructors.

   (a) In how many ways can teaching assignments be made?

   (b) In how many ways can teaching assignments be made such that no instructor teaches four or more classes?