

**MATH413      HW 2**

due **Feb 8** before class

**1:** (*P. 62, #14.*) A classroom has two rows of eight seats each. There are 14 students, 5 of whom always sit in the front row and 4 of whom always sit in the back row. In how many ways can the students be seated?

**2:** (*P. 62, #19.*) We are given eight rooks, five of which are red and three of which are blue.

(a) In how many ways can the eight rooks be placed on an 8-by-8 chessboard so that no two rooks can attack one another?

(b) In how many ways can the eight rooks be placed on a 12-by-12 chessboard so that no two rooks can attack one another?

**3:** (*P. 63, #21.*) How many permutations are there of the letters of the word ADDRESSES? How many 8-permutations are there of these nine letters?

**4:** (*P. 65, #38.*) How many integral solutions of

$$x_1 + x_2 + x_3 + x_4 = 30$$

satisfy  $x_1 \geq 2$ ,  $x_2 \geq 0$ ,  $x_3 \geq -5$ , and  $x_4 \geq 8$ ?

**5:** (*P. 65, #40 (a,b).*) There are  $n$  sticks lined up in a row, and  $k$  of them are to be chosen.

(a) How many choices are there?

(b) How many choices are there if no two of the chosen sticks can be consecutive?