**MATH304 HW 2**

due **Sep 10** before class, **answer without justification will receive 0 points**. The solution has to be typed (using LaTeX).

**1:** *(P. 62, #12.)* A football team of 11 players is to be selected from a set of 15 players, 5 of whom can play only in the backfield, 8 of whom can play only on the line, and 2 of whom can play either in the backfield or on the line. Assuming a football team has 7 men on the line and 4 men in the backfield, determine the number of football teams possible.

**2:** *(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?

**3:** *(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?

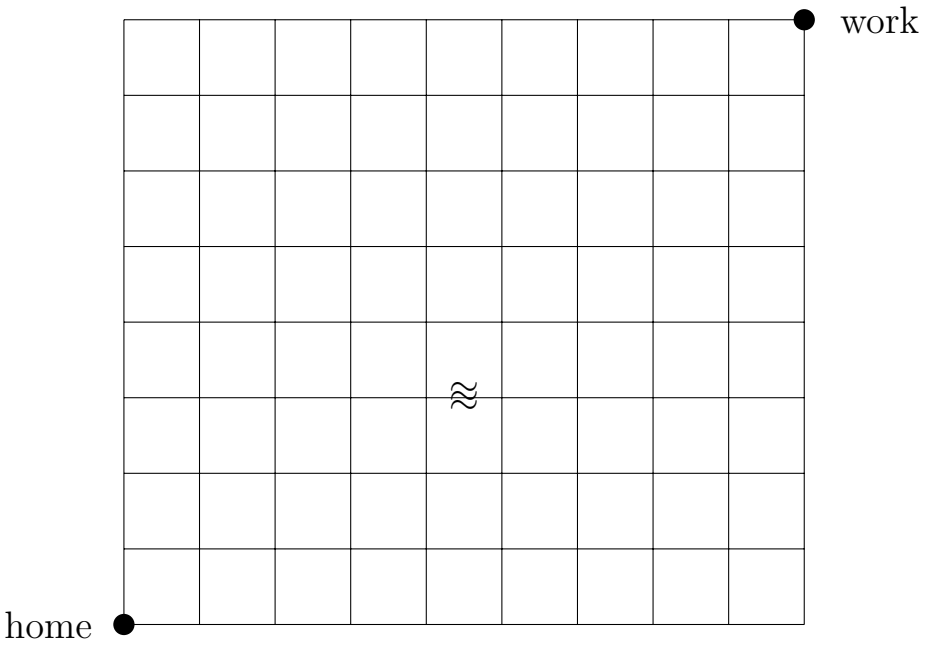
(b) In how many ways can the eight rooks be placed on a 12-by-12 chessboard so that no two rooks can attack one another?

**4:** *(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?

**5:** *(P. 63, #28)* A secretary works in a building located nine blocks east and eight block north of his home. Every day he walks 17 blocks to work. (See the map that follows.)

(a) How many different routes are possible for him?

(b) How many different routes are possible if the one block in the easterly direction, which begins four block east and three blocks north of his home, is under water (and he can't swim)? (Hint: use subtraction principle)




**6:** *(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?