Name:	

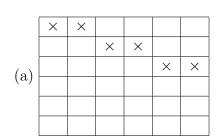
## Math 378 Spring 2011 Assignment 4

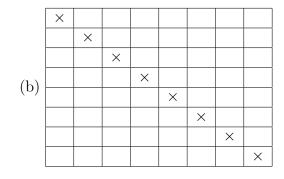
## To Hand In:

Brualdi Ch. 6: 2, 3, 7, 9, 10, 12, 14, 15, 16, 21, 29

## Extra Problems

- 1. A carousel has eight seats, each representing a different animal. Eight girls are seated on the carousel facing forward (each girl looks at another girl's back).
- (a) In how many ways can the girls change seats so that each has a different girl in front of her?
  - (b) How does this problem change if all the seats are identical?
- (c) Now arrange the girls in a line facing the girl in front of them. In how many ways can the girls rearrange themselves (in a line) so that each has a different girl in front of her?
  - (d) As in part (c), but now with n girls.
- 2. Count the number of ways to place n non-attacking rooks on the  $n \times n$  boards below with forbidden positions as shown.





- (c) What is the probability of (b)?
- 3. Two distinguishable circles and a triangle are given in the plane. What is the largest number of points that can belong to at least two of the three figures?