

Homework Assignment 6

- 1) Example 1.4.6
- 2) Example 1.4.7
- 3) Problem 18 on page 52
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Q1

Example 1.4.6. If there must be at least one person in each table, in how many ways can 6 people be seated

- (i) around two tables?
- (ii) around three tables?

(We assume that the tables are indistinguishable.)

Q2

Example 1.4.7. Show that

$$s(r, n) = s(r - 1, n - 1) + (r - 1)s(r - 1, n)$$

where $r, n \in \mathbb{N}$ with $n \leq r$.

Q3

18. A group of 20 students, including 3 particular girls and 4 particular boys, are to be lined up in two rows with 10 students each. In how many ways can this be done if the 3 particular girls must be in the front row while the 4 particular boys be in the back?
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Q4

19. In how many ways can 7 boys and 2 girls be lined up in a row such that the girls must be separated by exactly 3 boys?
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Q5

21. Find the number of $(m + n)$ -digit binary sequences with m 0's and n 1's such that no two 1's are adjacent, where $n \leq m + 1$.
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Q6

26. Find the number of ways of forming a group of $2k$ people from n couples, where $k, n \in \mathbb{N}$ with $2k \leq n$, in each of the following cases:
 - (i) There are k couples in such a group;
 - (ii) No couples are included in such a group;
 - (iii) At least one couple is included in such a group;
 - (iv) Exactly two couples are included in such a group.