Objectives: Counting Principles and Probability Space

Instruction

> This is a written assignment and is worth 10% of the marks for individual assignments. Please type your answers or write in legible handwriting. Answers that are messy and hard to read will be deducted marks.

> The assignment is due April 10th (Wednesday), 11:59pm.

Part A) (Exercise 9.29, Page 461 in the textbook) (5 points)

▷ Hint: Generalized product rule

Part B) Rooks at Random Positions (5 points)

Continuing with the setting in Part A), suppose that the black rook and the white rook are placed on the board independently and uniformly at random.

B.1) What is the probability for them to be in the same square?

B.2) What is the conditional probability for them to capture each other in the next move, given that they are in different squares.

To get the full marks, you need to (1) define your probability space and (2) indicate the events needed to calculate the probabilities.