

Probability Calculus 2019/2020, Homework 7 (two problems)

Name and Surname Student's number

In the problems below, please use the following: as k – the sum of digits in your student's number; as m – the sum of the two largest digits in your student's number; and as n – the smallest digit in your student's number plus 1. For example, if an index number is 609999: $k = 42$, $m = 18$, $n = 1$.

Please write down the solutions (transformations, substitutions etc.), and additionally provide the final answer in the space specified (the answer should be a number in decimal notation, rounded to four digits).

18. Monthly amounts of rainfall (measured in mm) in a sample of $4m + 3$ regions were observed to be $m, m + 1, \dots, 3m, 5k - 2m, 5k - 2m + 1, \dots, 5k$ and a , where a is a certain integer number. Knowing that the median of the sample amounts to $3m + 1$, find the value of the empirical CDF of the amount of rainfall at point $5k - 3n + 1/2$.

ANSWER:

Solution:

19. We have two boxes; there are m white balls and one black ball in the first box, and k white balls and one black ball in the second box. We randomly choose a box (each choice has the same probability) and then draw two balls simultaneously from the chosen box. Let X denote the number of black balls drawn, and Y denote the number of the box that was chosen. Find the correlation coefficient of variables X and Y .

ANSWER:

Solution: