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, $m+1$, ..., $3m$, $5k-2m$, $5k-2m+1$, ..., $5k$ 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: