

Mathematical Statistics 2018/2019, Homework 7

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).

7. The amount of time it takes a student to solve a homework problem in mathematical statistics (in minutes) follows a normal distribution with unknown mean μ and a variance equal to $m^2/4$. We want to verify the null hypothesis that $\mu = 2k$ against the alternative that $\mu = k$ on the base of a single observation X using the following procedure: if $X < c$, we reject the null. Find c such that the test has a power (for the alternative hypothesis) of $(100 - 5n)\%$. Calculate the significance level for the resulting test.

ANSWER:

value of c :	significance level:
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Solution: