Mathematical Statistics 2018/2019, Homework 8

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).

8. 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 $9m^2$. Find the most powerful test to verify the null hypothesis that $\mu = k$ against the alternative that $\mu = 2k$ on the base of k independent observations, for a significance level of $n\%$. Calculate the power of this test (for the alternative hypothesis). What is the decision, based on a sample of observations equal to $k+1, k+2, \ldots, 2k$?

ANSWER:

critical region of the test:	Power of the test:	Reject null? (YES/NO):

Solution: