

Mathematical Statistics 2018/2019, Homework 9

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).

9. A group of k students were surveyed regarding the amount of money they earn in temporary jobs during their summer break. Assuming that the amount earned (in hundreds of euro) follows a normal distribution with mean μ and variance equal to m^2 , where $\mu > 0$ is an unknown parameter, we want to verify the null hypothesis that $\mu = m$, against the alternative that it is less. What is the critical region of a $(2n)\%$ significance level test for these hypotheses? What is the value of the appropriate test statistic, if the sample average was equal to $m - 2n$? What is the p-value of this result? What is the decision?

ANSWER:

Critical region of the test:	Value of test statistic:	p-value of test statistic:	Reject null? (YES/NO):
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Solution: