

Mathematical Statistics 2018/2019, Homework 11 (One problem)

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).

11. A researcher wishes to determine whether preferences for chocolate are independent of the residence area of an individual. The breakdown of preferences based on a survey of a random sample of $9k$ individuals is presented in the table below:

| residence \ preferred chocolate type | dark | milk | white |
|--------------------------------------|----------|----------|----------|
| city | $k + 4n$ | $k - 4n$ | k |
| town | $k - 4n$ | k | $k + 4n$ |
| rural area | k | $k + 4n$ | $k - 4n$ |

Verify the hypothesis for a significance level of $\alpha = 0.05$.

ANSWER:

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

Solution: