Probability Calculus 2018/2019, Homework 2 (three 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).

3. We draw cards, one by one, without replacement, from a deck of 52 cards. Calculate the probability that the first ace will appear in the k-th draw, if we know that the n-th card was a spade, and the m-th card was not a club.

ANSWER:

Solution:

4. There are k cubic dice in a box: m of them are regular, and $k - m$ are false, with sixes on all sides. We repeat the following experiment $n + 2$ times: we draw a die (with replacement) and roll it once. Calculate the probability that sixes will be the outcomes of all the rolls.

ANSWER:

Solution:

5. There are m ice cream shops in a town, and they have the following property: ice cream shop number j sells j flavors of ice cream. A client randomly chooses an ice cream shop, and once inside, buys a scoop in each of the flavors available. As part of a special offer, the client receives a lottery scratch card for each scoop of ice cream bought. On each scratch card, there is one number from the set $\{1, 2, \ldots, k\}$. Calculate the probability that the client entered ice cream shop number 2, if the number on all of the scratch cards was 1.

ANSWER:

Solution: