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STOHASTIC METHOD OF CALCULATING THE NUMBER "e"

The aim of the article is to calculate the number $"e"$ by means of the mathematical method as well as stohastic experience. We aim to break the stereotype that Mathematics is a boring science. It associates with many interesting things, including games. The number $"e",$ also called number of Euler or Napier, connects the game industry and the theory of probability.

For many years people have been interested in the possibility of appearing of this or that card in card playing or gambling. The number $"e"$ is used for solving this problem. Calculating this number, we will be able to answer many questions. The study showed that the number is a fundamental mathematical constant, mathematical quantity, which is the base of the natural logarithms. Sometimes the number $"e"$ is called Euler's number and it plays an important role in integral and differential calculus, as well as in many other fields of mathematics. This number is also called the Napier one after the Scottish scientist John Napier. The constant itself was introduced by the Swiss mathematician Jakob Bernulli. The letter $"e"$ was used by Leonhard Euler in 1727. So, $"e"$ is sometimes called the Euler number.

The number $"e"$ is calculated using the stochastic methods and one of the Buffon's problems [1]. Is the result of it we get on exponent.

The transcendental number $"e"$ can be calculated on the basis of knowledge of probability theory with sufficiently high accuracy [2]. We'll study the nature of the computing method. If we take the pack of **n** identical cards, number them in order from 1 to **n**, carefully mix them, and spread the cards on the table in a row, the cards will lie in an orderly manner, and each card will correspond the number of place (counting from the beginning of the row). In order to compute the probability that the number of at least one card will coincide with the number of its place in the row, we number the cards 1, 2, 3, ... , **n**. Let the event A – "**i**-number of the card coincide with the number in a row." Then the event

$$A = A_1 + A_2 + A_3 + \cdots + A_n$$

means – that the "number in at least one card coincides with its number in the row[2, 3]."

Let A_1 i A_2 be compatible events, then

$P(A_1 + A_2) = P(A_1) + P(A_2) - P(A_1 A_2)$ **(1)**

If A_1, A_2, A_3 events are compatible, then

$P(A_1 + A_2 + A_3) = P(A_1) + P(A_2) + P(A_3) - P(A_1 A_2) - - P(A_1 A_3) - P(A_2 A_3) + P(A_1 A_2 A_3)$ **(2)**

In the result we get: $S_{nn} = P(A_1 A_2 \ldots A_n)$ **(3)**

We prove this statement by the method of mathematical induction. For n = 1 the formula is true. Suppose that the formula (3) is valid for any n. Now assume that n = k + 1. Define: $P(A_1 + A_2 + \cdots + A_k + A_{k+1})$.

Let: $B = A_1 + A_2 + \cdots + A_k$. Then: $S_{1,k+1} - S_{2,k+1} + S_{3,k+1} - \cdots \pm S_{k+1,k+1}$

So, the article has studied one of the stochastic methods of calculating the number $"e"$. The essence of this method lies in the fact that using the theory of probability, we can find the number $"e"$ with a sufficiently high accuracy. The aim of our further research is the study of stochastic methods for calculating the number **" π ".**

LITERATURE

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