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THE MATHEMATICAL PARADOX

Much attention has been paid to the theory of paradox since the ancient times. The ancient Greek scientist Euclid was the first who tried to describe the logical traps of paradoxes. He is the writer of the famous "Principia" and "Pseudariu".

A paradox is the unexpected phenomena or expressions that conflict with our knowledge and presentations. The ideas that are very different from our images can be expressed in paradoxes. [1]

The phenomenon was studied by many ancient and modern scientists: Euclid, Aristotel, M. Gardner, S. Klini, A. Conforovych and others.

In mathematics there are three types of paradoxes:

- arithmetic paradoxes are contradictive and absurd statements that are the consequence of the wrong mathematical actions;
- geometrical paradoxes are the theorems that seem strange and impossible, but they are well-proven logically, must be accepted as true, in spite of the fact that they go out outside our imagination and intuition;
- logical paradoxes, a major type of paradoxes, are connected with the theory of sets; the paradoxes of this type compelled to revise the bases of mathematics. [2]

One of arithmetic paradoxes is proves, that number 2 equals number 3:

2=3

$4-10=9-15$, $4-10+6\frac{1}{4}=9-15+6\frac{1}{4}$.

$$2^2-2\cdot 2\frac{5}{2}+\left(\frac{5}{2}\right)^2=3^2-2\cdot 3\cdot\frac{5}{2}+\left(\frac{5}{2}\right)^2,$$

$$\left(2-\frac{5}{2}\right)^2=\left(3-\frac{5}{2}\right)^2$$

$$2-\frac{5}{2}=3-\frac{5}{2}$$

2=3. [1]

The arithmetic paradoxes are interesting riddles, where while using some mathematical actions (addition, subtraction, division on into zero) we can come to an unexpected answer.

For example lel’s consider the Leibnits row. It seems to be simple:

1–1+1–1 +1–1 … . But if we calculate the statement in different ways, we will get different results: (1–1)+(1–1)+(1–1)+…=0

1–(1–1)+(1–1)…=1. [1]

One of the most known geometrical paradoxes is the paradox of Banaha-Tarckogo, as well as the paradox of Procl and the so-called "Aristotel wheel".

The logical paradoxes are extremely popular. Many logical paradoxes are built on the material of the special part of the theory of sets.

Mathematicians always paid much attention to the paradoxes and many attempts have been made to unriddle the history of their creation. Modern mathematicians are engaged in solving such problems. [2]

So, paradoxes made great influence to the development of mathematical thought and the theory of probability.

LITERATURE

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