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Topological games

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Abstract: In this article, the field of mathematics that studies the most general properties related to the shape of objects of any nature and the most important concepts of this field. In the last quarter of the 19th century, on the one hand, mathematicians such as B. Riemann and S. Lee introduced the concept of a much wider geometric image - composite (also called polyhedron) as a result of generalizing the concepts of line and surface. As a result of the study of various classes of functions, French mathematicians. In the works of Lebesgue (1875-1941), E. Borel (1871-1956) and others, it is said that the direction called analisis situs (situational analysis) begins to form.

Key words: Concept of topology, general properties related to the shape of mathematical objects, late 19th century, line and surface concepts of mathematicians such as B. Riemann, S. Lee, Lebesgue (1875-1941), E. Borel (1871-1956) formation of a direction called analisis situs.

Topology (Latin: topos - place, location and ...logy) is a field of mathematics that studies the most general properties related to the shape of objects of any nature and is one of the most important concepts in this field.

During the historical development of geometry for several thousand years, many specific lines and properties of surfaces have been studied, but in the last quarter of the 19th century, on the one hand, mathematicians such as B. Riemann, S. Lee, as a result of generalizing the concepts of lines and surfaces, created a much wider geometric image - composite (many also called) introduced the concept; on the other hand, as a result of the study of various classes of functions, a trend called analisis situs (situational analysis) began to take shape in the works of French mathematicians A. Lebesgue (1875-1941), E. Borel (1871-1956) and others.

In the same period, the Italian mathematician E. Betti (1823-98) generalized Euler's theorem on polynomials and introduced Betti numbers, an indicator that determines the level of complexity of multidimensional polynomial (according to the current term, line segment) structures.

A little later, J. A. Poincaré developed Topological as a result of applying the more general concepts of homology and fundamental group. predicted that he would play an important role in the further development of mathematics. At the beginning of the 20th century, the German mathematician F. Hausdorff (1868-1942) defined the concept of topological space. After that, the period of rapid development of Topologoya began. Topology by the middle of the 20th century. Along with algebra, it forms the foundation of all mathematics, the branches of mathematics are taken at one or another level with algebra. Topological. It was recognized that it consists of a synthesis of concepts and ideas.

If a set X of any nature is considered as such, there is no relationship between its elements. If the set X is a metric space, then it becomes possible to measure the distance between points and learn related concepts. A relatively broad concept is the proximity of a point to a subset or the concept of the neighborhood of a point. the main idea of mathematical analysis is to study the local (that is, determined only by

the nature around the point) properties of the functions and the results derived from them. In this case, the main role is played by the set of intervals of the point α in the form (α - ε, яQe).

X is a topological space if for each point of the set X there is a set of neighborhoods satisfying the following axioms;

1) each point belongs to its arbitrary neighborhood;

2) if u is the circumference of a point and U c w, then w is also the circumference of this point. Thus, a topological space is a Topology in a way. is a set provided with . In this case, this system of complexes is called Topology of space X.If the set X consists of continuous functions identified in the section (a), topological spaces with different properties are formed depending on the functions of the surrounding of the function f(x).

Generally, a set can be transformed into a topological space in several ways. In this case, their topologies are compared depending on the richness of the sets of neighborhoods of points - one Topological. one is stronger (richer) compared to the other, and the latter is called weaker.

The weakest Topological is if for all points x there is only one neighborhood consisting of X itself, and the strongest (discrete) Topological if any set containing x is declared to be its neighborhood. is formed. Also Topolpgik. instead of circles, open sets, closed sets, limit, closure, can be defined in a variety of ways, such as closure, open core of a set, base of circles - all of them are mutually equivalent. Topologically diverse in any set. Topological. indicates that it is a universal field of mathematics.

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