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Mathematical Proofs. Incomplete Induction, Deduction, Analogy. The Concept Of Algorithm And Its Properties.

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Abstract: *Inductive reasoning does not always lead to correct conclusions, but their role in the study of mathematics and other sciences is enormous. Inductive reasoning develops the ability to see commonalities in specific situations and to make assumptions.*

Keywords: The concept of algorithm and its properties, mathematical proofs, incomplete induction, deduction, analogy.

INTRODUCTION

If in the expression n2 + n + 41 the numbers 1, 2, 3, 4, etc. are substituted, for example, at n = 1 the value of the expression is equal to the prime number 43, at n = 2 the value of the expression is equal to the prime number 47, n At = 3, the value of the expression is equal to the prime number 53, and so on.

Based on the obtained results, it can be concluded that the value of the expression n1 + n + 41 in any natural n is a prime number.

METHODS

For example, 15 is divisible by 5, 25 is divisible by 5, 35 is divisible by 5, and 95 is divisible by 5. With this in mind, we can conclude that an arbitrary number ending in 5 is subtracted by 5. We drew a general conclusion based on a number of specific cases. Such consideration is inextricably linked to induction.

Conclusions drawn as a result of improper induction can be both true and false. For example, the conclusion that a number ending in 5 is subordinate to 5 is true and

In an arbitrary natural n, the value of the expression n2 + n + 41 is a prime number, and the claim is false. Indeed, if n = 41, 412 + 41 + 41 = 412 + 2 • 41 = 41 • (41 + 2) = 41 ■ 43, the value of the expression n2 + n + 41 becomes a complex number.

The concept of foundation is important in feedback analysis.

l-example. Avoid the “small” relationship between the numbers 5 and 6.

Yc c h ish. 5 is small because the number 5 is said before the number 6 in the number 6. Because: if the number a is said before the number b in the count, ii liolda a is a small b; The number 5 is said before 6 in the count. The first is a reasonable and general basis for arbitrary numbers a and b. The second sentence refers to the exact numbers 5 and 6 and says a special basis. The result obtained as a result of the two bases is called the sum dcb.

The reasoning relationship between the basis and the conclusion is called deductive reasoning.

If both the reason and the conclusion are true, it can be considered deductive. For example, if the general basis is "if the natural number is a multiple of 4, then it is a multiple of 2," the special basis is a multiple of 12 and the conclusion is a multiple of 12.

Thus, deductive and inductive reasoning are interrelated in the process of learning.

Inductive reasoning does not always lead to correct conclusions, but it plays an important role in the study of mathematics and other sciences. Inductive reasoning develops the ability to see commonalities in specific situations and to make assumptions.

In pedagogical colleges, inductive reasoning is often used. Generally, all general laws are inductively derived here. The law of substitution of addition and multiplication is based on the equations 0 + a = a, l - a = a, a: 1 = a, 0 • a = 0 and other laws.

In pedagogical colleges, in addition to the inductive inference, it is widely used to draw conclusions by analogy, in which the transfer of knowledge to the studied objects. Knowledge of the similarities and differences of these objects is the basis for copying. Analogy allows the development of mathematical induction, which is an important source of in-depth study of science.

However, it is important to remember that analogy can be both true and false. Conclusions drawn by analogy must be proved by deductive methods.

Algorithm - determining the order of work to be performed.

The concept of algorithm is one of the mathematical concepts and is the subject of research in a special branch of mathematics called Algorithm Theory.

An algorithm is a precise description of a process and an instruction to perform it. The word "algorithm" comes from translating the name of al-Khwarizmi, a ninth-century Central Asian mathematician, into European languages. Al-Khwarizmi showed the rule (algorithm) for performing arithmetic operations.

The task of algorithms is to teach algorithms to write (write), and the executor (human, robot, computer) must achieve a single result, following the rules of execution of algorithms. This puts some demands on the rules for writing algorithms. These are expressed in the following properties:

Accuracy property. Algorithm instructions must be unambiguous. The algorithm requires the necessary sequence of actions to be performed. clearly defines the sequence. The implementation process of the algorithm does not depend on the specific accountant.

Mass property. The algorithm must be valid at the desired arbitrary values of the initial data.

Performance property. The result sought must be obtained after a sufficient number of sufficient numbers for the allowable values of the initial maimots.

1- example. Nargiza loves fried potatoes. Arrange the mother's work in order:

a) pickled potatoes;

b) threw potatoes in hot oil;

d) lit the gas stove;

e) increased potatoes;

f) bought potatoes and butter from the store;

g) poured oil into a pot and put it on gas;

h) turned off the gas and floated the potatoes on a plate.

RESULTS

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