FORMULAS THAT ARE PROVED IN THE CALCULUS OF REASONING: THEORY, PRACTICE AND ANALYSIS

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Annotation. Today, it is essential to use IT, interactive pedagogical methods and techniques in order to conduct an effective lesson in the educational system. In this article, we will discuss about one of the critical topics of discrete mathematics and mathematical logic, the thinking of effective approaches to a meaningful explanation of the subject of the calculating "Provable formulas of feedback calculus" to students and interactive methods that can be used in practical training lessons, their advantages and disadvantages.

Keywords: Feedback accounting, a verifiable formula, the "Step by step" method, the "Mathematical Market" method.

Introduction

Nowadays, every subject is taught to students in higher education institutions, approaching scientifically in depth, and there is a great emphasis on enriching each subject with perfect, latest information. The role of modern pedagogical methods and interactive ways utilized during the course of the lesson is incomparable in the fact that students easily understand the topic mentioned well, the information on the topic is remembered for a long time.

LITERATURE ANALYSIS AND METADAGOGY

The calculus of considerations is an axiomatic logical system, and the algebra of considerations is its interpretation(interpretation). In reasoning calculus, we distinguish the class of formulas that are provable. First the initial provable formulas (axioms) are defined, followed by the provability rule. New provable formulas are derived from boron provable formulas by the provability rule. It is said to derive new provable formulas by applying the provability rule from initial provable formulas by inducing these formulas from axioms. The axiom system of calculus consists of axiom XI, which are divided into four groups [1].

First group axioms:

I_1 $x \to (y \to x)$.

I_2 $(x \to (y \to z)) \to ((x \to y) \to (x \to z))$.

Second group axioms:

II_1 $x \wedge y \to x$.

II_2 $x \wedge y \to y$

II_3 $(z \to x) \to ((z \to y) \to (z \to x \wedge y))$

Axioms of the third group:

III_1 $x \to x \vee y$

III_2 $y \to x \vee y$

III_3 $(x \to z) \to ((y \to z) \to (x \vee y \to z))$.

Axioms of the fourth group:

IV_1 $(x \to y) \to (\overline{y} \to \overline{x})$

IV_2 $x \to \overline{\overline{x}}$

IV_3 $\overline{\overline{x}} \to x$.

Substitute rule.

Let A be the provable formula of the reasoning calculus. Variable x, an arbitrary formula of the reasoning calculus B. The formula generated by substituting formula B instead of all x in formula A expression is also a provable formula.

The rule of substitution of Formula B in place of variables x in Formula A is called. We mark it with the following symbol.

$$\int_x^B (A)$$

If A is a provable formula, we agree to write it in the form |–A.

Then the substitution rule can be represented schematically as follows:

$$\frac{|-A}{|-\int_x^B (A)}$$

and reads it as " if A is a provable formula, then $\int_x^B (A)$ is also a provable formula".

Summary rule

If A and A→B are provable formulas of the reasoning calculus, then B is also a provable formula. This rule is written schematically as follows:

$$\frac{|-A;|-A \to B}{|-B}$$

Definition. The provable formulas are said to be proofs to the derivation process.

Now we see the interpretation of axioms in examples

Example. Prove: |– A → A

$\vdash (x \to (y \to z)) \to ((x \to y) \to (x \to z))$ – using axiom I_2. Performing a substitution $\int_z^x I_2$ results in

$\vdash (x \to (y \to x)) \to ((x \to y) \to (x \to x)) - (x \to (y \to z)) \to ((x \to y) \to (x \to z)$ (1) comes from. I_2 axiom and (1) formula using the inference rule

$$\vdash (x \to y) \to (x \to x) \qquad (2)$$

we form a formula. (2) substituting the following for the formula

$$\int_y^{\overline{x}} (2)\ bajarish\ natijasida$$

performance results in

$$\vdash (x \to \bar{\bar{x}}) \to (x \to x) \quad (3)$$

we have a provable formula. Applying the inference rule with respect to axiom IV_2 and Formula (3) gives

$$\vdash x \to x \qquad (4)$$

We come to a provable formula. Finally, if instead of the variable x in the formula (4) we put the formula A

$$\vdash A \to A$$

The formula that must be proved is generated.

In the meaningful and interesting organization of practical training, it is convenient to use several techniques, in particular the "Step by step" method. It is a very effective method for revising the 11 axioms on this topic. In this method, we divide the students into 2 groups. The ladder consists of 11 vertices, with 1 axiom written on each vertex. Then the result of their written axioms is checked and the winner is determined [2-18].

Discussion

Advantages of this method: attract student's attention, forms the skill of Information selection, teaches the correct, clear-cut expression of one's own opinion.

Disadvantages: almost undefined.

The use of the "Mathematical market" method in the more interesting organization of practical training lessons is much more effective. In this case, amounts of money are written on the back of the question sheet, depending on the degree of difficulty of the questions. The student receives the same score if they can complete that question. Solved examples are analyzed together with students.

Result

Advantages of the method: this method encourages students to be more mobile, diligent. Increases his interest in science. Teaches free, clear and correct, independent thinking. As a result, his knowledge of science is further strengthened.

Disadvantages of the method: it takes a little more time.

When we apply the "Mathematical market" method, the sheets can be prepared as follows. Indicate that the following formulas are provable using substitution and inference rules.

1) $A \vee A \to A$ 3) $A \wedge B \to B \wedge A$

2) $A \to A \wedge A$ 6) $A \vee B \to B \vee A$

Conclusion

As you know, a number of degrees signed by the president of our country provide great importance to the development of mathematics and its application in practice. At the core of ensuring the implementation of degrees, of course, lies in teaching science to students using advanced pedagogical methods and techniques. The methods "Step by step" and "Mathematical market" recommended in the article are positively accepted by students. Similar advanced pedagogical techniques have also been recommended in a number of scientific studies [9-30], and different ways of usage of them have been explained with examples. It is also widely covered that at present, taking into account the relevance of expanding the practical applications of the theory, it is also important to provide information about the integration of mathematics with other disciplines in the future.

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