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USING CONSIDERATION ACCOUNTING AXIOMES TO PROVE SOME FORMULAS

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Abstract
In this article, we will consider solving examples of the topic “the concept of proof”, one of the topics of discrete mathematics and mathematical logic that challenge most students. Knowing the subject of “axioms of reasoning calculus” is of great importance in inducing provable formulas. Through this article, we will show students how to easily prove induction formulas using a feedback account.

Keywords: formula, axiom, dysfunctions, conjunctions, implication, negation, reasoning calculus, proof.

Introduction

This article describes the symbols, formula, system of axioms, rules of derivation, the rule of deriving a formula from a set of formulas, the proof of some laws of logic, the relationship between the algebra of reasoning and the calculation of reasoning, and the solution of problems in the calculation of reasoning. The calculus of statements is an axiomatic logical system, and the algebra of statements is its interpretation.

Comments account symbols [1]. Har how account description this account symbols from the description , formulas and cause release formulas from the definition consists of

Considerations at the expense of three categorical from symbols consists of alphabet acceptance will be done .

First category symbols : $x, y, z, \ldots, x_1, x_2, x_3, \ldots$. These symbols **variables** we call it .

Second category symbols : $\vee, \wedge, \rightarrow, \neg$**.** These are **makes sense are connectors .** The first is disjunction or makes sense to add symbol , the second is a conjunction or makes sense multiplication sign , the third is an implication sign and the fourth is negation is called a sign .

The third to the category called parentheses (,) symbols is entered .

Considerations at the expense of another symbols no

Description [2] . Considerations account formula concept till the pourer defined as :

1) each how $x,y,z,\ldots$ o ' variables desired one is a formula ;

2) if A and V of each if one is a formula , then $(A \wedge B)$,$(A \vee B)$, $(A \rightarrow B)$and $\bar{A}$is also a formula.

3) other never how symbols be a string formula ca n't

Is it variable? **elementary** we call **formulas** .

Considerations account axioms system [3] . Considerations account axioms system from axiom XI consists of they are four to the group is divided .

First group axioms :

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

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

Second group axioms :

II_1 $(x \wedge y) \to x$
II_2 $(x \wedge y) \to y$
II_3 $(z \to x) \to ((z \to y) \to (z \to x \wedge y)$
The third group axioms :
III_1 $x \to x \vee y$
III_2 $y \to x \vee y$
$III_3 (x \to z) \to ((y \to z) \to (x \vee y \to z)$
T fourth group axioms :
$IV_1 (x \to y) \to (\bar{y} \to \bar{x})$.
IV_2 $x \to \bar{\bar{x}}$
IV_3 $\bar{\bar{x}} \to x$

Bringing release Instead of rules

to put the rule [4] . If *A* considerations account provable formula , *x* variable , *V* considerations account optional formula if , then *A in* the formula expression everyone instead of *x* 's *V* the formula to put as a result harvest the formula made is also a provable formula .

A in the formula everyone *x* variables instead of *V* the formula to put instead of operation (process). to put we say the rule and him as much as possible we define : $\int_A^B (A)$.

An example. $L = ((A \wedge B) \to (C \to B \wedge C)) \to (((A \wedge B) \to C) \to ((A \wedge B) \to B \wedge C)))$ formula

for the following instead of to put the result write : $\int\limits_{A \wedge B,B,C}^{x,y,z} (L)$

Solution : $\int\limits_{A \wedge B,B,C}^{x,y,z} (L) = (x \to (z \to y \wedge z)) \to ((x \to z) \to (x \to y \wedge z))$

Summary the rule . If*A* and $A \to B$provable account of considerations formulas if , then *B*is also a provable formula . This is the rule **conclusion** is called the **rule** and schematic respectively as follows is written :

$$\frac{\vdash A, \quad \vdash A \to B}{\vdash B}$$

An example . $w \to s$ formula provable that prove it

Solution : $I_2 = (x \to (y \to z)) \to ((x \to y) \to (x \to z))$ from the axiom we use Summary from the rule $x \to (y \to z)$ provable from being $(x \to y) \to (x \to z)$ provable the fact that come comes out Him A with set if we get

$A = (x \to y) \to (x \to z)$

Instead of to put from the rule if we use , $\int\limits_{y}^{\bar{\bar{x}}} (A)$ then $A = (x \to \bar{\bar{x}}) \to (x \to z)$ harvest will be Summary according to the rule according to $x \to \bar{\bar{x}}$ since it is a provable formula

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$A = x \to z$ the formula is provable the fact that come comes out Instead to put from the rule if we use , $\int_{x,z}^{w,s} (A)$ then $A = w \to s$ create a formula will be So the formula is provable .

Description [5] . (definition of provable formula).

a) each how axiom provable is a formula ;

b) provable in the formula *x* variable instead of optional *V* the formula to put as a result harvest the formula is a provable formula ;

d) *A* and $A \to B$ provable from formulas conclusion the rule apply as a result The obtained formula V is provable is a formula ;

e) Considerations account another never how formula is not a provable formula .

Description . Probable formulas harvest to do process proof it is called to do (prove) .

Example : $(w \vee s) \to (w \vee s)$ to provability check

Solution : $III_3 = (x \to z) \to ((y \to z) \to (x \vee y \to z))$ from the axiom we use Instead to put from the rule $\int_{z}^{x \vee y} (III_3) = (x \to x \vee y) \to ((y \to x \vee y) \to (x \vee y \to x \vee y))$ this the result we can Received III $_1$ to the result $x \to x \vee y$ and III $_2$ $y \to x \vee y$ axioms and two times conclusion the rule apply as a result $x \vee y \to x \vee y$ that it is a provable formula come comes out The following instead of to put the rule apply as a result

$$\int_{x,y}^{w,s} x \vee y \to x \vee y = w \vee s \to w \vee s$$

So , it is given our formula provable .

REFERENCES:

1. Murtozakulov, Z. M. (2023). DIFFERENTIAL OF A GRADED QUASI-FILIFORM LEIBNIS ALGEBRA BY THE NATURAL METHOD. Web of Humanities: Journal of Social Science and Humanitarian Research, 1(9), 20-24.
2. Муртозакулов, З., & Абдуллаев, Ш. (2023). КВАЗИ-ФИЛИФОРМ ЛЕЙБНИЦ АЛГЕБРАЛАРИНИНГ ДИФФЕРЕНЦИАЛИ. Interpretation and researches, 1(1).
3. Murtozaqulov, Z. M. (2023). LOGARIFM VA UNING XOSSALARI. BA'ZI BIR LOGARIFMIK TENGLAMA VA TENGSIZLIKLARNI YECHISH. Academic research in educational sciences, 4(CSPU Conference 1), 409-413.
4. Murtozaqulov, Z. M., & Xambaraliyeva, M. N. (2023). TRIGONOMETRIK TENGLAMALARNI YECHISHNING BA'ZI BIR USULLARI. Academic research in educational sciences, 4(CSPU Conference 1), 404-408.
5. Tolibayeva, Q. Q. (2023). Ta'lim jarayonida smart texnologiyalaridan foydalanish. Academic research in educational sciences, 4(CSPU Conference 1), 661-663.