Elements of Logic and Some Considerations on the Application of Operations on Them

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ABSTRACT

This article contains important sections of mathematical science - comments on the basic concepts of mathematical logic (statements that take true or false values) and information about their actions, their application in other disciplines, logical formulas and interpretations of laws in te language.

Keywords: reasoning, reverse disjunction, conjunction, implication, equivalence, negation of reasoning, logical laws, tautology.

Mathematics is considered one of the oldest and longest-growing subjects in the world. Mathematics is the basis for knowing the world and the world and is very important in revealing the unique laws of events around us. We all know that mathematics develops a person's worldview, expands his thinking, teaches him to think properly, draws the right conclusions, stimulates intelligence, develops attention, and nurtures determination and will.

Itis no secret that as a result of practical k skills, mathematics performs a leadership function in all areas. Therefore, special attention is paid to this subject in higher education, including humanitarian fields.

Students of humanitarian education will have certain difficulties in mastering mathematics for certain reasons, including the difficulty of mastering pure mathematical mathematics. (Matthew 24:14;28:19, 20) Therefore, it is very important for humanitarian students to understand the information, knowledge, examples, and issues provided in the teaching of mathematics. In addition, understanding and applying the relationship between mathematics and humanities is one of the most pressing issues.

The information provided is one of the attempts to show the relationship between mathematics and humanities as one of the most important concepts of mathematics, their actions, logical laws, and their use in other subjects.

Mathematical logic is a section of mathematics that works with a number of statements that can be determined by one value. Such remarks are called discussions. Discussions *a, b, C,....* is marked by characters. ^, / (conjunctivitis, "and", "but", "and", "idol"), (kneeling, "or", "or"), (implicit, "if .... if he finds it, he's..." "If... Then... "), (equivalence,".... to be ... necessary and adequate", "... Binary logic, known as if and only if...") is a $\vee$ $\Rightarrow$ $\Leftrightarrow$ denial of good deeds and unparlimentary action.— Denial, ".... not") hit.$\neg$

A, B, C,.... Logical **formulation** is called a complex discussion, which is combined in a certain order with a means of logicalthroats, such as denial, dysfunction, conjuncture, implication, and equivalence. Logicalformulas are a mathematical model of natural language discussions.

Simple words in this language are "and", "or", "if .... if he finds it, he's...", "... b to die ... to create a joint statement using the necessary and adequate" connectors.

For example, **A**: "Reader Boltayev is studying physics"; **V**: "The student Boltayev is mastering mathematics," S: "The reader, Boltayev, enters the prestigious higher education."

In that case, we will die with those inthe house of q:

AV: " ∧ Student Boltayev is studying physics and mastering mathematics."

AV: " ∨ Student Boltayev is studying physics or mastering mathematics."

AV: "If ⇒a student, Boltayev , is studying physics, he will learn mathematics"

A ∧ ¬*V*: "O'quvchi Boltayev fizikani o'rganyapti va matematikani o'zlashtirmayapti".

A ⇒ ¬*V*: "If the student Boltayev is studying physics, he will not master mathematics."

AV S: "If ∧ ⇒the student Boltayev is studying physics and mastering mathematics, he will go to a prestigious higher education."

SAV "If ⇒ ∧ the student Boltayev went to a prestigious higher education, studied physics and mastered mathematics."

Similarly, "If I graduate from university, I will take a bachelor's degree or work in my field." This discussion is expressed in the AVS view. ⇒ ∨

In the context of discussions, ***we present*** **tables of truthfulness** of logicalformulas. Such tables are based on the valueof discussions that make up whether the complex discussion with logical linkers is true or not (the table contains 1 true value, 0 false value):

A	*In*	*AND V*	*AND V*	¬*A*	*AND V*	*AND V*
1	1	1	1	0	1	1
1	0	0	1	0	0	0
0	1	0	1	1	1	0
0	0	0	0	1	1	1

Using the table in yuq, you can create a table of authenticity for more complex q discussions. For example(**AV** ∨)(A) ∧ ¬ ⇒**)V**, let's give the correctness table of the discussion:

A	*In*	*OF* ∨	¬*A*	*(A* ∨)(∧ ¬*A)*	*((AV* ∨) ∧ *(A))V* ¬ ⇒
1	1	1	0	0	1
1	0	1	0	0	1
0	1	1	1	1	1
0	0	0	1	0	1

By completing the table, we will see **that** the A and **V** discussions that are being viewed are always true b, regardless of ∨ whether q at'no ∧ *((AV* ¬ ⇒*)(A))V* will die.

This discussion isread as follows: "If **A** or **V** is correct and **A** is incorrect, then **V** is correct.

A discussion that is always true is called **logical law** or **tavtology** .

If **AV** ⇔ discussions are found in tavtology, then **discussions A** and **V** are called **equally strong** and are determined as ≡ **AV**.

Tavtologies (logical laws) ensure that thinking as the laws of thought is properly implemented. They represent the formation and interaction of concepts, discussions, and discussions that are forms of thought. Logic represents methods of proving that good laws are the right thing to do. Adhering to good laws of logic allows you to think correctly, understandably, clearly, consistently, conflict-freely, based. Clearness, consistency, and contradictions are the main signs of proper thinking. Because these are the hallmarks of logic that form the basis of good laws, we arrange each of them in a nutshel.

The main logicis good qtheirs:

1. $A \vee \neg B \equiv 1$ – **The law of denial of the third.**

This q is expressed in his q house: one of the two contradicting ideas is correct (true), the other is a mistake, and the third is impossible to do.

For example, the reader is either a member or a nobleman.

2. $A \wedge \neg B \equiv 1$ - **The law of conflict.**

(Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to discuss these answers with you. For example, at one point, the reader may not be able to be a member and a nobleman. The above-mentioned laws require that you avoid conflict in the thought process and ensure that thinking is consistent without contradiction.

3. $\neg(\neg A) \equiv A$ **-q thatdenial or denial denial law.**

For example, the idea that "it's wrong to say that this reader is not a member" comes up with the idea that "This reader is a member." Let's see another example. **A** discussion should be "This reader **knows** physics well." In that case - **A** discussion "This reader **does not know** physics " and the discussion "It is wrong for this student $\neg(\neg A)$ not to know physics well." As a result, the idea is, "This student knows physics well."

4. $A \Rightarrow B \equiv \neg B \Rightarrow \neg A$ - **The law of contraception.**

This allows the law to replace the conditions and conclusions using the act of denial. For example, the discussion: "If a person is a perfect man, he has deep knowledge," is equivalent to the discussion: "If a person does not have deep knowledge, he will not be a perfect person."

5. ***1) ;*** $\neg(A \wedge B) \equiv \neg A \vee \neg B$ **2)** $\neg(A \vee B) \equiv \neg A \wedge \neg B$ - **de Morgan qonunlari**.

De Morgan's laws make it possible to **replace** acts of conjunctivia and dysflexia with each other using an act **of denial**.

Examples: (1) The denial of the discussion "Students are learning German and French" is equivalent to "Students or not beating English or learning French."

(2) The denial of the discussion, "I went to the library after class or to breakfast," is equivalent to the discussion , "I didn't go to the library or to have breakfast after class."

6. $A \wedge B \equiv B \wedge A$; $A \vee B \equiv B \vee A$ - **command laws.**

The discussion "Studentsdo not learn German and French" is equivalent to "Studentsdo not learn French and German."

The discussion "Studentsdo not learn German or French" is equivalent to the discussion "Studentsdo not beat French or German."

7. - $A \wedge (B \wedge C) \equiv (A \wedge B) \wedge C$; $A \vee (B \vee C) \equiv (A \vee B) \vee C$ **Laws of association.**

8. $A \wedge (B \vee C) \equiv (A \wedge B) \vee (A \wedge C)$; $A \vee (B \wedge C) \equiv (A \vee B) \wedge (A \vee C)$ - **Laws of distribution**.

9. - $A \wedge (B \vee A) \equiv A$; $A \vee (B \wedge A) \equiv A$ **qisqartirish qonunlari.**

10. . $A \Rightarrow B \equiv \neg A \vee B$

Example: "If I have free time, I will go to the cinema" is equivalent to a discussion of "Either I won't have free time, or I'll go to the movie."

11. $\neg A \Rightarrow B \equiv A \vee B$.

Example: "If there is no x pair of numbers, there will be a substantial number" discussion equal to the "x or pair number or substantial number."

12. $A \Rightarrow \neg B \equiv \neg A \vee \neg B$.

The discussion "If there is an x pair of numbers, there will be no underlying number" is equivalent to the discussion "there will be no x or pair of numbers or there will be no substantial number."

13. $A \wedge B \equiv \neg(A \Rightarrow \neg B)$.

"The reader answers well in the classroom and can take a good look" is equal to the "It is wrong for the reader not to answer in the classroom or to answer it."

14. $((A \Rightarrow B) \wedge A) \Rightarrow B$. This law is followed as far as q house:

When A is correct, let **B** be correct. In this case, **A** is correct. So **B** xam is right.

15 $((A \Rightarrow B) \wedge \neg B) \Rightarrow \neg A$. This law is followed as far as q house:

When A is correct, let **B** be correct. But **B** is wrong. So **A** xam is wrong.

16. . . . This $((A \vee B) \wedge (\neg A)) \Rightarrow B$ law is followed as far as q house:

Whether A or **B** is correct and **A** is not correct. So **B** is wrong.

17. This law is followed as follows: $((A \Rightarrow B) \wedge (B \Rightarrow C)) \Rightarrow (A \Rightarrow C)$.

Let B come from A and *C* from *B*. In that case, *A* to *C* comes and chiqadi.

In a mathematical logic fan, many such logical laws can be cited. The fund has a wide range of options. By replacing the discussion with his denial, you can also create a new logicalgood law. Yu q'sexamples show that the laws of mathematics, especially its mathematical logic department, are widely used in all subjects.

We looked at examples of the direct use of logical formulas and laws in humanitarian science as well. Discussion implicit ("if .... if he finds it, then... ") you can also work on the participating statement (formula). communication is called the theory in mathematics. The prerequisite for a theory, $A \Rightarrow B$ B is called the conclusion of the theory. The theory given by replacing the terms and conclusions of the theory is called the reverse theory. The theory given by denying the terms and conclusions of the theory is called $B \Rightarrow A$ $\neg A \Rightarrow \neg B$ qsearch-q arshi theory, and finally, the theory is called the opposite theory. You can give cups of coffee for examples of the use of theories and their types in philosophy $\neg B \Rightarrow \neg A$.

A: "The gap is made up of two or more q simple statements" and B: "Talk is a joint statement." At the same time, the discussion reads: "If the statement consists of two or more simple things, there will be a joint statement." It is well-known that this statement represents the q oida of a joint statement in its native language, $A \Rightarrow B$ and this discussion accepts the true value.

$B \Rightarrow A$ the discussion reads, "If there is a joint statement, it will consist of two or more simple statements." This discussion is also of true value.

$\neg A \Rightarrow \neg B$ the discussion reads, "If the statement is not made up of two or more simple statements, there will be no joint statement." As you can see, this discussion also has true value.

$\neg B \Rightarrow \neg A$ the discussion reads: "If there is nojoint statement, it is not made up of two or more simple statements." This discussion is also of true value.

One example is the rule that similar words are a quality word category.

$A \Rightarrow B$ "If the word answers the questions, "qanday, what?" quality will be the word." All aspects of this discussion also accept true value.

Let's see another example. Let's see the discussion of "If it rains, the earth will be rude." You can also read the discussion by saying, "B comes from A and chiqadi" or "It's A, so it's B." A discussion for the "If it rains, the earth will be rude" () will appear, "If the earth is a master, the rain will be burned." This discussion has a false value because the earth can be wet even when sprinkled with water. After giving this example, an understanding appears that not all the statements involved in the implica will be true. To assist individuals desiring to benefit the worldwide work of Jehovah's Witnesses through some form of charitable giving, a brochure entitled Charitable Planning to Benefit Kingdom Service Worldwide has been prepared. "If it does not rain, the earth will not be rude." Many $A \Rightarrow B$ $B \Rightarrow A$ $\neg A \Rightarrow \neg B$ readers make amistake in evaluating the value of this discussion. Finally, "If the earth is not a master, it will not rain" (true). $\neg B \Rightarrow \neg A$

For example, the following discussions, of course, awaken students' daughterqjobs and teach them to think properly.

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Benefit Kingdom Service Worldwide has been prepared.

At the same time, it is necessary to specify another important rule. If information is provided that discussions (theory) and (theory opposite to reverse theory) should have the same value, that discussions (reverse theory) and (theoretical theory opposite theories) should have the same value, $A \Rightarrow B$ $\neg B \Rightarrow \neg A$ $B \Rightarrow A$ $\neg A \Rightarrow \neg B$ readerswill be able to fix their own mistakes in hulosa.

There are many such examples of the use of mathematics in the humanities. This, of course, is only one concept of mathematics - to show thatdiscussions and related actions are used in humanities. Additionally, examples of the predicate, quantum, function, relationship, graph, extimolity, and other concepts of mathematics are used in humanities.

(Matthew 24:14; 28:19, 20) Raising mature young people who are highly intelligent, independent, well-educated, well-educated, well-educated, well-educated, (Galatrah 5:22, 23) Jehovah's Witnesses would be pleased to support more than the gecko's body weight—even when it is skittering upside down across a globe!

Logic, a law of thought, ensures that good laws ensure that thinking is properly implemented. They represent the formation and interaction of concepts, discussions, and conclusions that are forms of thought. Logicallows you to think correctly, understandably, clearly, consistently, conflict-freely, based on good laws. Accuracy, consistency, and conflict are the main signs of proper thinking. Because these were the hallmarks of logic that formed the basis of good laws, we tried to review each of them in a nutnient way.

One of the main concepts of mathematical logic in the article and the binary logical actions set out on them - the design, conjunctivity, implicitity, equivalence of discussions; denial of unparative action; Examples and issues are given that show the relationship between logical good formulas, laws, and their use, interpretation, and mathematics and humanities. The information provided is intended for studentsand mathematics teachers in humanitarian education.

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