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A New Approach Towards Infinity

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Abstract

This paper presents various approaches and analysis made on infinity with this a new approach towards infinity is presented in this paper . Various curious question about infinity is covered . The impact of infinity on various streams is very special and here an attempt is made to define infinity that will make our vision more specific towards infinity .

Keywords: Dynamic infinity , static infinity .

Introduction

Infinite is a privation not perfection " it was Aristotle vision about infinity. If we think about a sequence of numbers then it goes on and don't have any endpoint such type of ongoing event is called potentially infinite. When infinite is taken in such a way that it is being used to analyse real things then it is called actual infinity . Time and space seems ongoing without end .The curious question about these real entities arises that "is there any way to map these infinite things in the cage of our approaches and imagination that could lead towards absolute results " . The answer is "YES" , in this paper my theory is running in search of defining the infinity . "If i cannot reach up to infinity , It doesn't mean that it cannot be defined " , to define infinity means that our reach is just parallel to map it .

Related Work

In 1600 the great Galileo said that " Infinity is not an inconsistent notation , but rather it obeys different type of rules." In 1821 , Cauchy defined limit and continuity in modern way. In 1831 Carl Frederich Gauss said " I protest about infinity as a actual entity and infinity is only a manner of speaking , in which one properly speaks of limits to which certain ratios can come as near as desired , while others are permitted to increase without bound ". There is nothing we can consider as a concrete value [1].

There is nothing in real can be called as actual infinity and when we tell about such infinite collection then we tell about a such collection to which we can add every time new elements .

In 1850 ,1854,1858 , Karl Weierstrass ,Georg Friedrich Bernhard Riemann ,Dedekind respectively give their theories to explain the same issue .In 1874 **Cantor** said that the algebraic numbers can be put in one to one correspondence with natural numbers but the set of real numbers can not be put into one to one correspondence with natural numbers[1] . Cantor diagonal method explained various factors . In 1882 Cantor make world aware about new infinity that distinguishes cardinality from order , cardinal numbers from ordinal numbers. In 1895 cantor presented cardinal exponentiation . He defined cardinality of natural numbers with aleph-null.

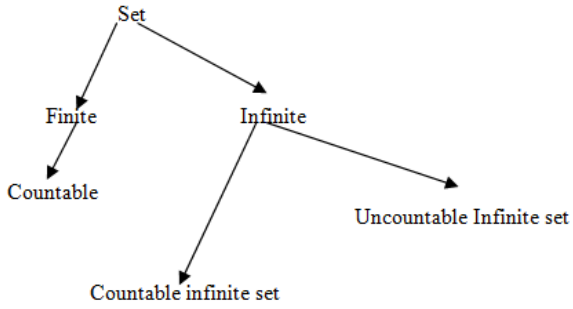

Figure : 1

Se t s is countable if there exists enumeration process .If there is bisection from natural number set (B) to another set in that case if N (set of natural number) is countable then B is also countable.
There are certain theorems involved that can make more wider aspect.

Theorem 1. Every infinite set has a countable infinite subset .

Theorem 2. Every subset of countable set is countable.

Theorem 3. If a set s is countable infinite then 2^s is uncountable infinite. (Cantor's diagonalization argument).

There are certain axioms that are given by Zermelo are given as follows[1]:-

1. Axiom of extensionality
2. Axiom of separation
3. Axiom of elementary sets
4. Power set axiom
5. Axiom of union
6. Axiom of choice
7. Axiom of infinity
8. Axiom of replacement
9. Axiom of choice

There is a set a A containing the empty set and such that for any object y , if y belongs to A then {y} also belongs to A. Similarly the facts explained by all other axioms explains the very efficient and path showing properties.

Abraham Robinson introduced in the mid-twentieth century his theory of non standard analysis, infinitesimals were formulated on a logical basis .
Julie A. Theo bald and James S. Walker in his paper "Applications of the analysis of infinities " introduced to infinity from various angles of computer science , math , biology , economics, philosophy and linguistics . In this paper it is shown how cantor approaches give a new direction to standard problems like [2]---

1. Insolvability of halting problem
2. Incompleteness Theorems
3. Concept of ecological niche
4. Comparision of dance language of bees with human language
5. Mathematical economics

Kirk ,Anne in his paper "Intimations of infinity " focuses on APOS theory that helps to understand the thinking of how one grapple with the notion of infinity . The following problems are taken for analysis[3] .

1. Achilles and the Tortoise
2. Infinitesimals
3. Is .999…=1?
4. Tennis Balls
5. Getting N from a process
6. The result of taking infinite union
7. Getting an uncountable set from and countable algorithm.

Proposed Approach

According to our proposed model there is no existence of absolute infinity . The question arises ,"Is there any way to break infinity " ,we created theorems to prove our specific approach .

Newly Developed Theorems:-

Theorem 1: If one can not find the never ending process called infinity ,then try to find the start of process by doing this process if you can not reach to infinity but surely you can define it then .

Proof : Suppose there are set of numbers in number line both at positive axis and negative axis , at both axis numbers are expanding up to infinite can we make our reach possible up to that extent . The answer is 'no' but if according to our theorem if we try to run towards the start of this then we reach to origin. At that point that is origin we see a very specific situation, that defines infinity but how?
Origin contains zero if we sum all infinite numbers in both axis of positive and negative axis then again get zero .So here origin contains the " Sum of all the numbers at both axis " . Now zero appears itself as a infinite thing contain all or can be define as a infinite universal container of infinite entities with the presence of complements of all those infinite entities .

Theorem 2: Finite is the producer of infinite .

Proof : It can be proved as one simple fraction number may produce a ongoing expanding number another example is our finite mind that produce infinite thoughts .

Theorem 3:Infinite is not real but a representation of entity to which reach at that instant is not possible .This representation is not problem but it is a solution to a lot of problems.

Theorem 4 : Infinite should be handled carefully because things get vary very differently at start and end point .

Proof : If we analyze most of things behave in different manner at start and ending point . For example the activities like 0/0 is not defined here we are dealing with starting numbers . The reason is if we try to define this term lot of well defined things will loss their meaning .Similarly there are many other cases .

Theorem 5 : According to me , there are generally two type of infinite static infinite and other is dynamic infinite .

Proof: The term static infinite can be defined by an example - Suppose there is something like any number that is appearing infinite to us but it's end boundary are fixed but not known to our finite mental boundary such infinite is called static infinite . This type of infinite can be broken but next one is more critical .

The term dynamic infinite can be defined by an example –Suppose there is something like number that is appearing infinite to us but in this case it's end boundary are not fixed but dynamic or more clearly we can say expanding . This type of infinite is very typical to be broken for this type of infinite we give theorem 1 that gives indication there are some points or situation where defining something is sufficient .

Theorem 6: The process of pattern finding , strong analysis of repetitive activity ,formulization ,relative approach of tracing are some methods that can me used to make infinite process to converge under finite boundary of our finite workspace .

Conclusion

In this paper we analyze various threads of infinite , various approaches are included to make approach clear towards infinity the notation of infinite and it's use in limit , calculus defines it's utility , our new approaches in term of theorems make the vision of infinity more clear to all .

Future Work

The future analysis includes the study and implementation of static and dynamic infinity in running math boundary and make it define under certain notations .

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[2] Julie A. Theobald , James S. Walker , "Applications of the analysis of infinities "