

Possible solution to the halting problem

The halting problem is a basic problem in the theory of computing and mathematics. The problem first appeared in 1936. This problem raises the question: is it possible to program an algorithm that can state if other program will stop by any given input, or the program will keep running forever.

The problem seems to be simple, but Alan Turing proved there's isn't any solution to this problem, in other words there's no algorithm that can state automatically if the program will or will not stop by any given input.

Let's say we have a program that is called P, P program receives the program T and the input I. The question is, will the program P stop while receiving the input I. The halting problem asks if it is possible to find an algorithm called H whose role is to state if the program P will stop by the input I.

My solution to this problem:

According to the definition the limitation of infinitesimal mathematics the series of (a_n) has a limit L as $(n \rightarrow \infty)$ if for every positive number ϵ , no matter how small ϵ is, exists a corresponding index N for all $(n > N)$: $|a_n - L| < \epsilon$.

Define the series (a_n) so that every element in the series will be defined by: $(1/n)$.
Define the variable counter to 0.

By any given program T for the input I, counter will increase by 1 for every program T run. The program P will define the series $(1/n)$ that, so our series will be defined as $(1/\text{counter})$. To prove that the limit of the series $(a_n = 1/\text{counter})$ has $(n \rightarrow \infty)$ if for every $(\epsilon > 0)$ there exists an integer N for all $n, n > N$, we have the following: $(|a_n - L| < \epsilon)$ in this case we want to prove that $(\lim_{\text{counter} \rightarrow \infty} 1/\text{counter} = 0)$ Thus, we need to show that for every $(\epsilon > 0)$, there is a corresponding N such that for all $n, n > N$, the inequality $(|1/\text{counter} - 0| < \epsilon)$ holds. To solve for n , we rearrange the inequality: $(\text{counter} > 1 / \epsilon)$ Therefore, if we choose $(N = 1/\epsilon)$, for all $n > N$, we have $(\text{counter} > (1/\epsilon)) \Rightarrow ((1/\text{counter}) < \epsilon)$ this shows that for any $(\epsilon > 0)$, there exists an integer $(N = 1/\epsilon)$ such that for all $n > N$, the terms of the series satisfy: $\{|(1/\text{counter}) - 0| = (1/\text{counter}) < \epsilon\}$. Thus $(\text{counter} \rightarrow \infty)$ this says the program T executes infinite times, therefore the program P based on the infinitesimal mathematics will state that the program T for input I executes infinite times.

Incase $(\text{counter} = \text{finite number})$ the expression $(|a_n - L| < \epsilon)$ will be false and program P will state that the program T for input I will stop at some point.

I will be grateful if anybody formally disproves my theory,

Thanks.