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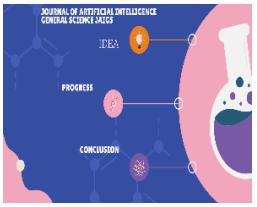

Collatz Conjecture Solution

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ABSTRACT

The Collatz conjecture, also known as the 3n + 1 conjecture, stands as one of the most enduring unsolved problems in mathematics. Proposed by German mathematician Lothar Collatz in 1937, the conjecture poses a deceptively simple question: can iteratively applying two basic arithmetic operations—dividing even numbers by 2 and multiplying odd numbers by 3 and adding 1—lead any positive integer to converge to the value 1? Despite extensive computational verification for vast ranges of integers, a proof or disproof remains elusive. This abstract explores the historical background, various attempts at proving the conjecture, and its implications across mathematical domains.

Introduction

Collatz Conjecture Solution

The Collatz conjecture[a] is one of the most famous unsolved problems in mathematics. The conjecture asks whether repeating two simple arithmetic operations will eventually transform every positive integer into 1.https://en.wikipedia.org/wiki/Collatz_conjecture

The solution in simple words, all number made out of 1.
Like 1=1
2=1+1
3=1+1+1
4=1+1+1+1
5=1+1+1+1+1
Etc.

I am saying not only 1 is repetitive but 4,2,1 is repetitive.

3x+1 in if x=1 then, 3(1)+1= 4, then as per rules 4/2 =2 then 2/2=1 means 4,2,1

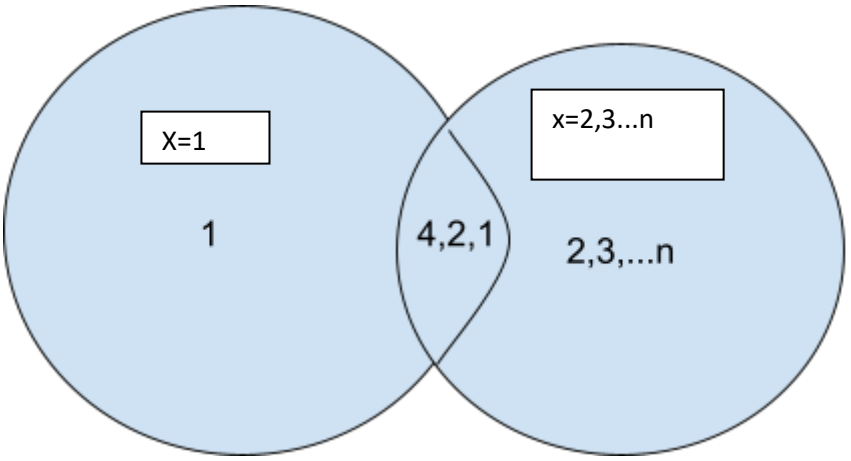
Now if x=2 then 3(2)+1=7 then as per rules 3(7)+1=22, then 22/2= 11, then 3(11)+1= 34 then 34/2= 17, then 52/2=26,26/2=13,40/2=20,20/10=10,10/2=5, 3(5)+1=16, 16/2=8, 8/2=4, 4/2=2, 2/2=1

Now if x=3 then 3(3)+1=10, 10/2 = 5, 3(5)+1=16, 16/2=8, 8/2=4, 4/2=2, 2/2=1

If we see in all solutions starting from one of the small integers 4,2,1 is repetitive.

Because in x=3 there is ans 5.

all happing due to condition: -my(x+1) work same but then only2,1 is repetitive.
We are multiplying by 3 but more than once we are dividing.



All is happening because of Conditions, noting else, if its undividable we add it back to the formula, If put even number in it, 2,4,6… then it's converted by 3X+1 to 7,13….in odd number. Odd number as X gives us even numbers.

https://en.wikipedia.org/wiki/Collatz_conject