

From: blogs.ams.org/matheducation/2015/05/01/famous-unsolved-math-problems-as-homework/

Given a positive integer n , if it is even, calculate $n/2$, otherwise if it is odd then calculate $3n+1$; repeat this process with the resulting value. (1.0)

We assume the apparatus of the Meth8 modal logic model checker implementing variant system VL4. Meth8 allows to mix four logical values with four analytical values. The designated *proof* value is T.

Definition	Axiom	Symbol	Name	Meaning	2-tuple	Ordinal
1	$p=p$	T	Tautology	proof	11	3
2	$p@p$	F	Contradiction	absurdum	00	0
3	$\%p>\#p$	N	Non-contingency	truth	01	1
4	$\%p<\#p$	C	Contingency	falsity	10	2

LET: + Or; & And; \ Not and; > Imply; < Not imply; @ Not equivalent to;
 # all; % some; (p@p) 00, zero ; (%p<#p) 10, two ; (%p>#p) 01, one;

Results are the proof table of 16-values in row major horizontally.

$$(p>(p@p))>(((p=(\%p>\#p))>(p\(\%p<\#p)))+((p=(\%p<\#p))>((p\&(p=p))+(\%p>\#p)))));$$

TTTT TTTT TTTT TTTT

(1.1)

Eq. 1.1 shows the conjecture is tautologous.