

Refutation of the continuum hypothesis

© Copyright 2018 by Colin James III All rights reserved.

We assume the method and apparatus of Meth8/VL4 with Tautology as the designated *proof* value, F as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal.

LET p, q, r, s : minimal cardinality, integer, real, set.
 \sim Not; $\&$ And; $>$ Imply, greater than; $=$ Equivalent;
 $\#$ necessity, for all; $\%$ possibility, for one or some.

From: en.wikipedia.org/wiki/Continuum_hypothesis

The continuum hypothesis states that the set of real numbers has minimal possible cardinality which is greater than the cardinality of the set of integers. (1.1.1)

$$((s\&r)>(\%p<p))>((s\&q)>\%p) ; \quad \text{TTTT TTTT TTCT TTTT} \quad (1.1.2)$$

That is, every set, S , of real numbers can either be mapped one-to-one into the integers or the real numbers can be mapped one-to-one into S . (1.2.1)

$$((\#s\&r)>q)+(\%r>\#s) ; \quad \text{TTTT TTTT TTTT TTTT} \quad (1.2.2)$$

Eq. 1.1.1 is equivalent to Eq. 1.2.1. (1.3.1)

$$(((s\&r)>\%p)>((s\&q)>\%p)) = (((\#s\&r)>q)+(\%r>\#s)) ; \quad \text{TTTT TTTT TTCT TTTT} \quad (1.3.2)$$

Eq. 1.1.2 as rendered is *not* tautologous, thereby refuting the continuum hypothesis. This is the briefest known refutation of the continuum hypothesis.

Eq. 1.2.2 as rendered is proffered as an obtuse restatement and is tautologous, a theorem.

Eq. 1.1.2 is supposed to be equivalent to Eq. 1.2.2 as Eq. 1.3.2. However 1.3.2 is *not* tautologous. This further refutes the continuum hypothesis.