Refutation of the totherian set definition

We assume the method and apparatus of Meth8/VŁ4 with Tautology as the designated *proof* value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). Results are a 16-valued truth table in row-major and horizontal, or repeating fragments of 128-tables for more variables.

LET p, q, r, s: x, y, E;
~ Not; + Or; - Not Or; & And; = Equivalent; > Imply; < Not Imply;
% possibility, for any one or some, ∃; # necessity, for every or all, ∀.
(s=s) T tautology, good; (s@s) **F** contradiction, bad.

From: Bado, I.O. (2018). From the totherian analysis to the hypothesis of Riemann. vixra.org/pdf/1809.0554v1.pdf (olivier.bado@ensea.edu.ci)

Let E be a nonempty set, E is totherian if and only if

$\forall(x,y) \in E^2$, $(x+y) \in E$, $(x-y) \in E$ (2.1.1)

We decompose the clauses.

$\forall(x,y) \in E^2$ (2.1.1.1)
(#p&#q)<(r&r) ; **FFF**N **FFFF** **FFF**N **FFFF** (2.1.1.2)

$(x+y) \in E$ (2.1.2.1)
(p+q)<r ; **F**TTT **FFFF** **F**TTT **FFFF** (2.1.2.2)

$(x-y) \in E$ (2.1.3.1)
(p-q)<r ; T**FFF** **FFFF** T**FFF** **FFFF** (2.1.3.2)

The argument from Eq. 2.1.1 expands to:

$\forall(x,y) \in E^2$ & $(x+y) \in E$ & $(x-y) \in E$ (2.1.4.1)
((#p&#q)<(r&r))&(((p+q)<r)&((p-q)<r));
FFFF **FFFF** **FFFF** **FFFF** (2.1.4.2)

Eqs. 2.1.1.1, 2.1.2.2, 2.1.3.2, and 2.1.4.2 as rendered are *not* tautologous. This refutes the definition of totherian sets.

Remark: If the And connectives in Eq. 2.1.4.1 are replaced by the Imply connective to the strengthen the argument toward tautology, the result remains *not* tautologous.

((#p&#q)<(r&r))>(((p+q)<r)&((p-q)<r)) ; TTTC TTTT TTTC TTTT (2.1.5.2)