Abstract: We evaluate the division theorem of intuitionistic type theory as not tautologous, hence disclosing the shortest refutation of intuitionistic type theory. These results form a non tautologous fragment of the universal logic $VŁ4$.

We assume the method and apparatus of Meth8/VŁ4 with Tautology as the designated proof value, $\mathbf{F}$ as contradiction, $\mathbf{N}$ as truthity (non-contingency), and $\mathbf{C}$ as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

Let $\neg$, $\lor$, $\cap$, $\cup$; $\neg \lor$; $\&$, $\land$, $\land$, $\land$; $\neq$, $\neq$; $\equiv$, $\equiv$; $\implies$, $\implies$; $\neg \implies$; $\forall$, $\forall$; $\exists$, $\exists$; $\ominus$.

Note for clarity, we usually distribute quantifiers onto each designated variable.

From: Dybjer, P.; Palmgren, E. (2016). Intuitionistic type theory. plato.stanford.edu/entries/type-theory-intuitionistic/ peterd@chalmers.se

Intuitionistic type theory (also constructive type theory or Martin-Löf type theory) is a formal logical system and philosophical foundation for constructive mathematics. It is a full-scale system which aims to play a similar role for constructive mathematics as Zermelo-Fraenkel Set Theory does for classical mathematics. It is based on the propositions-as-types principle and clarifies the Brouwer-Heyting-Kolmogorov interpretation of intuitionistic logic. It extends this interpretation to the more general setting of intuitionistic type theory and thus provides a general conception not only of what a constructive proof is, but also of what a constructive mathematical object is. The main idea is that mathematical concepts such as elements, sets and functions are explained in terms of concepts from programming such as data structures, data types and programs. This article describes the formal system of intuitionistic type theory and its semantic foundations.

2. Propositions as types
2.1.2 An intuitionistic logic with proof-objects

Consider a theorem of intuitionistic arithmetic, such as the division theorem

$$\forall m, n. \exists q, r. mq + r = n$$

(2.1.2.1)

LET $p, q, r, s$: $m, q, r, n$.

$$\neg(p>\neg)>(\neg(p\&\neg)+\neg r)=\neg s;$$

NNNN FNNFN FNNFN NNNNN (2.1.2.2)

Remark 2.1.2.1.2: Eq. 2.1.2.1.2 as rendered is not tautologous, hence refuting intuitionistic type theory by its division theorem.