

## Modal logic systems confirmed by Meth8/VL4

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

LET  $\vee$  Or;  $\supset$  Imply;  $\%$  possibility, for one or some;  $\#$  necessity, for all or every.

From: [helsinki.fi/~negri/ptml\\_final.pdf](http://helsinki.fi/~negri/ptml_final.pdf)

We evaluate the following modal logic systems: (2, M); (3); (4); (B); (D); (E); (K); (T); and (W).

System	Meth8/VL4 equations	Table results	Descriptive result
(2, M)	$\% \# p \supset \# \% p$	TTTT TTTT TTTT TTTT	Tautology
(3)	$\#(\# p \supset q) \vee \#(\# q \supset p)$	NNNN NNNN NNNN NNNN	Truthity
(4)	$\# p \supset \# \# p$	TTTT TTTT TTTT TTTT	Tautology
(B)	$p \supset \# \% p$	TTTT TTTT TTTT TTTT	Tautology
(D)	$\# p \supset \% p$	TTTT TTTT TTTT TTTT	Tautology
(E)	$\% p \supset \# \% p$	TTTT TTTT TTTT TTTT	Tautology
(K)	$\#(p \supset q) \supset (\# p \supset \# q)$	TTTT TTTT TTTT TTTT	Tautology
(M,2)	$\% \# p \supset \# \% p$	TTTT TTTT TTTT TTTT	Tautology
(T)	$\# p \supset p$	TTTT TTTT TTTT TTTT	Tautology
(W)	$\#(\# p \supset p) \supset \# p$	CTCT CTCT CTCT CTCT	Not Tautology, not Truthity

**Remark:** Gödel logic (GL) is system K+W, diverging most from tautology.