L3 24 Jan 2022

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Tautology, Contradiction and Contingency

↳ **Tautology** :→ A compound proposition which is always true, no matter what the truth values of the propositional variables that occur in it

Contradiction :→ A compound proposition which is always false

Contingency :- A compound proposition which is neither tautology nor Contradiction.

means some of the output values are true and some are false.

Compound proposition

$\neg(p \wedge q) \leftrightarrow \neg p \vee \neg q$ → Tautology

p	q	¬p	¬q	p∧q	¬(p∧q)	¬p∨¬q	¬(p∧q) ↔ ¬p∨¬q
T	T	F	F	T	F	F	T
T	F	F	T	F	T	T	T
F	T	T	F	F	T	T	T
F	F	T	T	F	T	T	T

Always true

② $[p \vee (\neg p \wedge q)]$

p	q	¬p	¬p∧q	p∨(¬p∧q)
T	T	F	F	T
T	F	F	F	T
F	T	T	T	T

→ Contingency

T	F	F	F	T	
F	T	T	T		
F	F	T	F	F	