show that $p \Rightarrow (q \Rightarrow r) = (p \wedge q) \Rightarrow r$

$q \to p$
$p \to q$
$p \to q \to F$
$T \to F$

p	q	r	$q \to r$	$p \to (q \to r)$	$p \wedge q$	$(p \wedge q) \to r$
0	0	0	T	T	F	T
0	0	1	T	T	F	T
0	1	0	F	T	F	T
0	1	1	T	T	F	T
1	0	0	T	T	F	T
1	0	1	T	T	F	T
1	1	0	F	T	T	T
1	1	1	T	T	T	T

Ques: $(p \vee \sim q) \vee (q \wedge \sim p) \equiv (p \vee q) \wedge \sim (p \wedge r)$

Contigency → A Compound statement which either be true or false or false depending upon Component proposition value.

T F − F
$p \to q$

Tautology (T)
Contradiction (C)
Contigency (Not Defined)

$p \leftrightarrow q$
T T − T
F F − T
$(p \to q) \wedge (q \to p)$

→ P: → Ram

statement is replaced By the Variables.
statement formula is an Expression which is a string consisting string of variables, parenthesis and connective symbols.
Any string of these symbol is a statement formula.

Ff:→
R1:- A statement variable standing alone is wff.
R2:→ If A is wff then $\neg A$ is a wff.
R3:→ If A & B are wff, then $(A \wedge B)$, $(A \vee B)$, $(A \to B)$ & $(A \Leftrightarrow B)$ are wff.

① Ex: Acc. to this definition, the following well-formed formulas
$\neg(P \wedge Q)$, $\neg(P \vee Q)$, $(P \to (P \vee Q))$, $(P \to (Q \to R))$ &
$(((P \to Q) \wedge (Q \to R)) \Leftrightarrow (P \to R))$

2 $\neg P \wedge Q$ is Not wff because it would Be either $(\neg P \wedge Q)$ or $\neg(P \wedge Q)$. Here $\neg P \wedge Q$ does not contain parenthesis

$(P \to Q) \to (\overset{\text{Binary}}{\wedge} Q)$ is not wff because $\wedge Q$ is not statement Variable. Here no other statement or variable.

$\to 2 \; h \to 6$

tatement variables, symbol, statement, connective symbols and Parenthesis

t wff $\neg P \wedge Q$, $(P \to Q) \to (\wedge Q)$, $(P \to Q$ ↳ No parenthesis

Here only one preposition or ()

$(P \wedge Q) \to Q)$ → No left parenthesis.

(P) → No wff. (No bracket)

wff →

f P is wff then $\sim P$ is also wff.

P & Q are wff then $(P \wedge Q)$, $(P \vee Q)$, $(P \to Q)$, $(P \rightleftarrows Q)$

$P \wedge Q$ ← No wff

$P \to Q \to R$ → No $((P \to Q) \to R)$ or $(P \to (Q \to R))$ → well formed f. wff

$P \to (Q \to R)$ → No wff

P is preposition then it is wff

$\sim P$ is also wff

$\to Q)$ → 2 preposition 2 Connect not poss No wff.

$\to Q))$ → No wff.

$Q) \vee (PQ))$ → No wff

Agr apke pas 2 prepositionhai uske saath ek logical connective along with bracket mandatory

Valid ⇓ Tautology

Satisfiable ⇓ Tautology ⇓ Contigency

Unsatisfiable ⇓ Contradiction.

How to Distinguish.

if kbhi likhe hei → Satisfiable but not valid.

$((P \to Q) \wedge (Q \to R)) \to (P \to R)$

Last Column all T (come means Tatulogy means valid.

) $(P \to Q) \to (\sim P \to \sim Q)$

) $(P \wedge (P \vee \sim Q)) \to Q$

$((P \to R) \vee (Q \to R)) \to ((P \vee Q) \to R)$

→ $(P \to (Q \vee R)) \to ((P \wedge Q) \to R)$ → all T one false

1) Satisfiable but not valid

2) Valid

3) Contradiction

4) None of These