

①

p	q	$p \rightarrow q$	$(p \rightarrow q) \wedge p$	white
T	T	T	T	T
T	F	F	F	T
F	T	T	F	T
F	F	T	F	T

Q.2 $((P \text{ or } q) \text{ and } (\sim P)) \rightarrow q$

(2)

P	q	P or q	$\sim P$	$(P \text{ or } q) \text{ and } (\sim P)$	value
T	T	T	F	F	T
T	F	T	F	F	T
F	T	T	T	T	T
F	F	F	T	F	T

(3)

Q.3 $((P \rightarrow q) \wedge (q \rightarrow r)) \rightarrow (P \rightarrow r)$

P	q	r	$P \rightarrow q$	$q \rightarrow r$	both	$P \rightarrow r$	value
T	T	T	T	T	T	T	T
T	T	F	T	F	F	F	T
T	F	T	F	T	F	T	T
T	F	F	F	T	F	F	T
F	T	T	T	T	T	T	T
F	T	F	T	F	F	T	T
F	F	T	T	T	T	T	T
F	F	F	T	T	T	T	T

$$\neg(p \text{ or } q) \iff (\neg p) \text{ and } (\neg q)$$

p	q	$p \text{ or } q$	$\neg(p \text{ or } q)$	$\neg p$	$\neg q$	$(\neg p) \text{ and } (\neg q)$
T	T	T	F	F	F	F
T	F	T	F	F	T	F
F	T	T	F	T	F	F
F	F	F	T	T	T	T

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