

F1037

No. 152
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Tutorial 1

1.	P	Q	R	$\neg P$	$(Q \wedge R)$	$\neg(Q \wedge R)$	$(P \vee \neg(Q \wedge R))$	$(\neg P \wedge Q)$	$((\neg P \wedge Q) \wedge R)$
	T	T	T	F	T	F	T	F	F
	T	T	F	F	F	T	T	F	F
	T	F	T	F	F	T	T	F	F
	T	F	F	F	F	T	T	F	F
	F	T	T	T	T	F	F	T	T
	F	T	F	T	F	T	T	T	F
	F	F	T	T	F	T	T	F	F
	F	F	F	T	F	T	T	F	F

$$(P \vee \neg(Q \wedge R)) \vee ((\neg P \wedge Q) \wedge R)$$

T
T
T
T
T
T
T
T

∴ This is tautology.

2. a) $C(x) \wedge D(x)$ ✓
 b) $\neg(C(x) \vee D(x))$ ✓
 c) $D(x) \rightarrow \neg(C(x))$ ✓
 d) $F(x) \leftrightarrow \neg(C(x) \vee D(x))$ ✓
 ~~$F(x) \leftrightarrow \neg(C(x) \vee D(x))$~~

$$3. a. \exists p(F(p) \wedge B(p)) \rightarrow \exists j L(j)$$

> If some printer is busy out of service and busy, then some print job is lost.

$$b. \forall p B(p) \rightarrow \exists j Q(j)$$

> If all printer is busy, then some print job is queued.

$$c. \exists j(Q(j) \wedge L(j)) \rightarrow \exists p F(p)$$

> If some print job is queued and lost, then some printer is out of service.

$$d. (C(x) \wedge B(x)) \wedge \neg L(x) \rightarrow \exists j Q(j)$$

print job is lost.

- A. Let P be the proposition "It is Sunday today", Q is "We play soccer.", R is "we play basketball", S is "the soccer field is occupied" and T is "We play volleyball".

Rules of inference

$$P \rightarrow Q \vee R$$

$$S \sim Q$$

$$P$$

$$S$$

$$R \vee T$$

Premis

Premis 1

Premis 2

Premis 3

Premis 4

~~Conclusion~~

No Statement Expression.