

Complete the truth tables.

1.

P	Q	R	$P \vee Q$	$P \supset R$	$\neg R$	$(P \supset R) \supset \neg R$	$\neg[(P \supset R) \supset \neg R]$	$(P \vee Q) \wedge \neg[(P \supset R) \supset \neg R]$
T	T	T	T	T	F	F	T	T
F	T	T	T	T	F	F	T	T
T	F	T	T	T	F	F	T	T
F	F	T	F	T	F	F	T	F
T	T	F	T	F	T	T	F	F
T	F	F	T	F	T	T	F	F
F	F	F	F	T	T	T	F	F

2.

P	R	$R \vee P$	$\neg P$	$(R \vee P) \wedge \neg P$	$[(R \vee P) \wedge \neg P] \supset P$	$\neg\{[(R \vee P) \wedge \neg P] \supset P\}$	$\neg\neg\{[(R \vee P) \wedge \neg P] \supset P\}$
T	T	T	F	F	T	F	T

3.

Q	R	$Q \wedge R$	$\neg R$	$(Q \wedge R) \wedge \neg R$	$R \wedge \neg R$	$[(Q \wedge R) \wedge \neg R] \supset (R \wedge \neg R)$	$\neg\{[(Q \wedge R) \wedge \neg R] \supset (R \wedge \neg R)\}$
F	T	F	F	F	F	T	F
T	F	F	T	F	F	T	F
F	F	F	T	F	F	T	F

4.

P	Q	R	$Q \supset Q$	$R \supset P$	$Q \wedge R$	$(Q \wedge R) \vee (R \supset P)$	$\neg[(Q \wedge R) \vee (R \supset P)]$	$(Q \supset Q) \supset \neg[(Q \wedge R) \vee (R \supset P)]$
T	T	T	T	T	T	T	F	F
F	T	T	T	F	T	T	F	F
T	F	T	T	T	F	T	F	F
F	F	T	T	F	F	F	T	T
F	T	F	T	T	F	T	F	F
T	F	F	T	T	F	T	F	F
F	F	F	T	T	F	T	F	F

5.

P	Q	$P \supset Q$	$\neg P$	$\neg Q$	$\neg\neg P$	$(P \supset Q) \supset \neg\neg P$	$[(P \supset Q) \supset \neg\neg P] \wedge \neg Q$

6.

P	Q	$P \vee Q$	$Q \supset P$	$P \wedge P$	$(Q \supset P) \vee (P \vee Q)$	$Q \vee (P \wedge P)$	$[(Q \supset P) \vee (P \vee Q)] \supset [Q \vee (P \wedge P)]$
	T	T	T	T	T	T	T
	T	T	F	F	T	T	T
	F	T	T	T	T	T	T
	F	F	T	F	T	F	F

7.

P	Q	$P \supset P$	$\neg P$	$\neg Q$	$\neg P \wedge P$	$\neg Q \wedge (P \supset P)$	$[\neg Q \wedge (P \supset P)] \supset (\neg P \wedge P)$
T	F	T	F	T	F	T	F

8.

P	Q	R	$Q \supset P$	$Q \supset R$	$P \wedge R$	$(Q \supset P) \supset P$	$(Q \supset R) \wedge (P \wedge R)$	$[(Q \supset R) \wedge (P \wedge R)] \supset [(Q \supset P) \supset P]$
T	T	T	T	T	T	T	T	T
T	T	F	T	F	F	T	F	F
T	F	T	T	T	T	T	T	T
T	F	F	T	F	F	T	F	F
F	T	T	F	T	T	F	T	F
F	T	F	F	F	F	F	F	F
F	F	T	T	T	F	T	F	F
F	F	F	T	F	F	T	F	F

9.

P	Q	R	$Q \wedge P$	$\neg R$	$(Q \wedge P) \supset R$	$[(Q \wedge P) \supset R] \wedge \neg R$	$\{[(Q \wedge P) \supset R] \wedge \neg R\} \supset \neg R$
T	T	T	T	F	F	F	T
T	T	F	T	T	T	T	T
T	F	T	F	F	T	F	T
T	F	F	F	T	T	F	T
F	T	T	T	F	F	F	T
F	T	F	T	T	T	T	T
F	F	T	F	F	T	F	T
F	F	F	F	T	T	T	T

10.

P	Q	R	$P \supset Q$	$Q \supset R$	$(P \supset Q) \wedge R$	$R \wedge (Q \supset R)$	$[R \wedge (Q \supset R)] \supset [(P \supset Q) \wedge R]$	$\neg\{[R \wedge (Q \supset R)] \supset [(P \supset Q) \wedge R]\}$
T	T	T	T	T	T	T	T	F
T	T	F	T	F	F	F	T	T
T	F	T	F	T	F	T	F	T
T	F	F	T	F	F	F	T	T
F	T	T	T	T	T	T	T	F
F	T	F	T	F	F	F	T	T
F	F	T	T	T	T	T	T	F
F	F	F	T	T	T	T	T	F

11.

P	Q	R	$Q \vee R$	$Q \supset Q$	$Q \wedge R$	$(Q \vee R) \vee (Q \supset Q)$	$P \wedge (Q \wedge R)$	$[(Q \vee R) \vee (Q \supset Q)] \wedge [P \wedge (Q \wedge R)]$
T	T	T	T	T	T	T	T	T
T	T	F	T	T	F	T	F	F
T	F	T	T	T	F	T	F	F
T	F	F	T	T	F	T	F	F
F	T	T	T	T	T	T	T	T
F	T	F	T	T	F	T	F	F
F	F	T	T	T	F	T	F	F
F	F	F	T	T	F	T	F	F

12.

P	Q	R	$R \vee Q$	$R \supset P$	$P \wedge Q$	$(P \wedge Q) \vee (R \supset P)$	$(R \vee Q) \vee [(P \wedge Q) \vee (R \supset P)]$	$\neg\{(R \vee Q) \vee [(P \wedge Q) \vee (R \supset P)]\}$
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	F	T	T	\bar{F}
\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	F	F	T	\bar{F}
\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	T	T	T	\bar{F}
\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	F	T	T	\bar{F}
\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	F	T	T	\bar{F}
\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	F	T	T	\bar{F}

18.

P	Q	$Q \vee P$	$\neg P$	$Q \vee (Q \vee P)$	$\neg\neg P$	$\neg\neg\neg P$	$[Q \vee (Q \vee P)] \supset \neg\neg\neg P$
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}

19.

P	Q	R	$R \vee P$	$R \vee R$	$P \wedge R$	$(R \vee P) \vee Q$	$(P \wedge R) \supset (R \vee R)$	$[(P \wedge R) \supset (R \vee R)] \vee [(R \vee P) \vee Q]$
\bar{T}		\bar{T}	\bar{T}	\bar{T}			\bar{T}	
\bar{F}		\bar{T}	\bar{T}	\bar{T}			\bar{T}	
\bar{T}		\bar{T}	\bar{T}	\bar{T}			\bar{T}	
\bar{F}		\bar{T}	\bar{T}	\bar{T}			\bar{T}	
\bar{T}		\bar{F}	\bar{T}	\bar{F}			\bar{T}	
\bar{F}		\bar{F}	\bar{F}	\bar{F}			\bar{T}	
\bar{T}		\bar{F}	\bar{T}	\bar{F}			\bar{T}	
\bar{F}		\bar{F}	\bar{F}	\bar{F}			\bar{T}	

20.

P	Q	$Q \supset P$	$Q \wedge P$	$(Q \supset P) \supset P$	$[(Q \supset P) \supset P] \supset (Q \wedge P)$	$\{[(Q \supset P) \supset P] \supset (Q \wedge P)\} \vee P$	$\neg(\{[(Q \supset P) \supset P] \supset (Q \wedge P)\} \vee P)$
\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}		\bar{T}	\bar{F}
\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{T}		\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}		\bar{T}	\bar{F}
\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{F}		\bar{T}	\bar{F}

21.

P	Q	R	$Q \vee R$	$Q \supset R$	$\neg Q$	$P \supset (Q \vee R)$	$\neg Q \wedge (Q \supset R)$	$[\neg Q \wedge (Q \supset R)] \supset [P \supset (Q \vee R)]$
\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}
\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}

22.

P	Q	$P \vee P$	$P \supset Q$	$\neg Q$	$\neg Q \wedge (P \supset Q)$	$[\neg Q \wedge (P \supset Q)] \supset P$	$\{[\neg Q \wedge (P \supset Q)] \supset P\} \vee (P \vee P)$
			\bar{T}		\bar{F}	\bar{T}	
			\bar{T}		\bar{F}	\bar{T}	
			\bar{F}		\bar{F}	\bar{T}	
			\bar{T}		\bar{T}	\bar{F}	

23.

Q	R	$Q \vee Q$	$Q \supset R$	$\neg R$	$(Q \vee Q) \vee Q$	$(Q \supset R) \supset [(Q \vee Q) \vee Q]$	$\{(Q \supset R) \supset [(Q \vee Q) \vee Q]\} \vee \neg R$
\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}

24.

P	$P \supset P$	$\neg P$	$(P \supset P) \wedge \neg P$	$[(P \supset P) \wedge \neg P] \vee P$	$\neg\{[(P \supset P) \wedge \neg P] \vee P\}$	$\neg\neg\{[(P \supset P) \wedge \neg P] \vee P\}$
\bar{T}	\bar{T}	\bar{T}		\bar{T}	\bar{F}	\bar{T}

25.

P	Q	R	$P \vee Q$	$Q \vee P$	$Q \wedge R$	$(Q \vee P) \wedge (Q \wedge R)$	$\neg(P \vee Q)$	$\neg(P \vee Q) \vee [(Q \vee P) \wedge (Q \wedge R)]$
\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{T}
\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}
\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}
\bar{T}	\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}

26.

P	Q	R	$Q \wedge R$	$\neg P$	$\neg R$	$\neg R \vee (Q \wedge R)$	$\neg P \wedge P$	$[\neg R \vee (Q \wedge R)] \vee (\neg P \wedge P)$
\bar{T}	\bar{T}	\bar{T}	\bar{T}		\bar{F}		\bar{F}	\bar{T}
\bar{F}	\bar{T}	\bar{T}	\bar{T}		\bar{F}		\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{F}		\bar{F}		\bar{F}	\bar{F}
\bar{F}	\bar{F}	\bar{T}	\bar{F}		\bar{F}		\bar{F}	\bar{F}
\bar{T}	\bar{T}	\bar{F}	\bar{F}		\bar{T}		\bar{F}	\bar{T}
\bar{F}	\bar{T}	\bar{F}	\bar{F}		\bar{T}		\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{F}	\bar{F}		\bar{T}		\bar{F}	\bar{T}
\bar{F}	\bar{F}	\bar{F}	\bar{F}		\bar{T}		\bar{F}	\bar{T}

27.

P	Q	R	$R \vee P$	$\neg Q$	$(R \vee P) \wedge P$	$\neg Q \supset [(R \vee P) \wedge P]$	$\{\neg Q \supset [(R \vee P) \wedge P]\} \wedge \neg Q$
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{T}	\bar{F}
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}

28.

P	Q	$P \vee Q$	$Q \wedge P$	$\neg Q$	$(Q \wedge P) \supset \neg Q$	$Q \wedge (P \vee Q)$	$[Q \wedge (P \vee Q)] \vee [(Q \wedge P) \supset \neg Q]$
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29.

P	Q	R	$R \vee Q$	$\neg P$	$\neg Q$	$\neg\neg Q$	$\neg\neg Q \vee (R \vee Q)$	$[\neg\neg Q \vee (R \vee Q)] \wedge \neg P$
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{F}
\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}
\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}

30.

P	R	$P \vee P$	$\neg R$	$\neg R \vee \neg R$	$\neg(P \vee P)$	$\neg(P \vee P) \supset (\neg R \vee \neg R)$

31.

P	Q	R	$P \vee Q$	$R \vee R$	$R \wedge P$	$(P \vee Q) \vee (R \wedge P)$	$\neg(R \vee R)$	$\neg(R \vee R) \vee [(P \vee Q) \vee (R \wedge P)]$
\bar{T}	\bar{T}		\bar{T}		\bar{T}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{T}		\bar{T}		\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{T}	\bar{F}		\bar{T}		\bar{T}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{F}		\bar{F}		\bar{F}	\bar{F}	\bar{F}	\bar{F}
\bar{T}	\bar{T}		\bar{T}		\bar{F}	\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{T}		\bar{T}		\bar{F}	\bar{T}	\bar{T}	\bar{T}
\bar{T}	\bar{F}		\bar{T}		\bar{F}	\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{F}		\bar{F}		\bar{F}	\bar{F}	\bar{T}	\bar{T}

32.

P	Q	R	$P \wedge R$	$\neg Q$	$\neg Q \wedge R$	$(\neg Q \wedge R) \supset (P \wedge R)$	$\neg[(\neg Q \wedge R) \supset (P \wedge R)]$	$\neg\neg[(\neg Q \wedge R) \supset (P \wedge R)]$
\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}
\bar{T}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}
\bar{F}	\bar{F}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}

33.

P	Q	R	$Q \vee R$	$\neg P$	$\neg R$	$\neg R \vee P$	$\neg P \wedge (Q \vee R)$	$[\neg P \wedge (Q \vee R)] \wedge (\neg R \vee P)$
\bar{T}	\bar{T}	\bar{T}	\bar{T}				\bar{F}	\bar{F}
\bar{F}	\bar{T}	\bar{T}	\bar{T}				\bar{T}	\bar{F}
\bar{T}	\bar{F}	\bar{T}	\bar{T}				\bar{F}	\bar{F}
\bar{F}	\bar{F}	\bar{T}	\bar{T}				\bar{T}	\bar{F}
\bar{T}	\bar{T}	\bar{F}	\bar{T}				\bar{F}	\bar{F}
\bar{F}	\bar{T}	\bar{F}	\bar{T}				\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{F}	\bar{F}				\bar{F}	\bar{F}
\bar{F}	\bar{F}	\bar{F}	\bar{F}				\bar{F}	\bar{F}

34.

P	Q	R	$P \vee Q$	$\neg R$	$\neg R \vee Q$	$(P \vee Q) \wedge Q$	$[(P \vee Q) \wedge Q] \wedge P$	$\{[(P \vee Q) \wedge Q] \wedge P\} \wedge (\neg R \vee Q)$
T	T	T	T		T		T	T
F	T	T	T		T		F	F
T	F	T	T		F		F	F
F	F	T	F		F		F	F
T	T	F	T		T		T	T
F	T	F	T		T		F	F
T	F	F	T		T		F	F
F	F	F	F		T		F	F

35.

P	Q	$\neg P$	$\neg Q$	$\neg Q \supset \neg P$	$\neg(\neg Q \supset \neg P)$
	T	F	F		F
	T	T	F		F
	F	F	T		T
	F	T	T		F

36.

P	Q	$\neg P$	$\neg Q$	$\neg Q \supset P$	$\neg\neg P$	$\neg(\neg Q \supset P)$	$\neg\neg P \supset \neg(\neg Q \supset P)$
F	T	T	F	T	F	F	T
T	F	F	T	T	T	F	F
F	F	T	T	F	F	T	T

37.

P	Q	R	$R \vee P$	$R \vee Q$	$R \vee R$	$(R \vee R) \supset (R \vee Q)$	$Q \wedge (R \vee P)$	$[Q \wedge (R \vee P)] \supset [(R \vee R) \supset (R \vee Q)]$
T	T	T		T	T		T	T
F	T	T		T	T		T	T
T	F	T		T	T		F	T
F	F	T		T	T		F	T
T	T	F		T	F		T	T
F	T	F		T	F		F	T
T	F	F		F	F		F	T
F	F	F		F	F		F	T

38.

P	R	$R \vee P$	$R \wedge P$	$R \wedge R$	$(R \vee P) \wedge (R \wedge R)$	$\neg(R \wedge P)$	$[(R \vee P) \wedge (R \wedge R)] \supset \neg(R \wedge P)$

39.

P	R	$R \vee R$	$R \supset R$	$P \wedge R$	$(R \supset R) \vee (R \vee R)$	$[(R \supset R) \vee (R \vee R)] \supset (P \wedge R)$	$\{[(R \supset R) \vee (R \vee R)] \supset (P \wedge R)\}$
T		T			T	T	T
F		T			T	F	F
T		F			T	F	T
F		F			T	F	F

40.

P	Q	$Q \vee Q$	$Q \supset Q$	$\neg P$	$\neg P \vee (Q \supset Q)$	$[\neg P \vee (Q \supset Q)] \vee (Q \vee Q)$	$\neg\{\neg P \vee (Q \supset Q)\} \vee (Q \vee Q)\}$
T			T		T	T	F
F			T		T	T	F
T			T		T	T	F
F			T		T	T	F

41.

Q	R	$R \wedge R$	$\neg Q$	$(R \wedge R) \wedge \neg Q$	$(R \wedge R) \wedge Q$	$[(R \wedge R) \wedge \neg Q] \vee [(R \wedge R) \wedge Q]$

42.

P	$P \vee P$	$P \supset P$	$\neg P$	$(P \supset P) \supset \neg P$	$\neg(P \vee P)$	$[(P \supset P) \supset \neg P] \wedge \neg(P \vee P)$

43.

P	Q	R	$P \wedge R$	$Q \wedge (P \wedge R)$	$[Q \wedge (P \wedge R)] \supset P$	$\neg\{[Q \wedge (P \wedge R)] \supset P\}$	$\neg\neg\{[Q \wedge (P \wedge R)] \supset P\}$	$\neg\neg\neg\{[Q \wedge (P \wedge R)] \supset P\}$
T	T	T	T				T	F
F	T	T	F				T	F
T	F	T	T				T	F
F	F	T	F				T	F
T	T	F	F				T	F
F	T	F	F				T	F
T	F	F	F				T	F
F	F	F	F				T	F

44.

P	Q	R	$Q \vee P$	$P \wedge Q$	$R \wedge Q$	$(Q \vee P) \supset Q$	$(R \wedge Q) \wedge (P \wedge Q)$	$[(Q \vee P) \supset Q] \wedge [(R \wedge Q) \wedge (P \wedge Q)]$
	T	T				T	T	
	T	T				T	F	
	F	T				F	F	
	F	T				T	F	
	T	F				T	F	
	T	F				T	F	
	F	F				F	F	
	F	F				T	F	

45.

P	Q	R	$P \vee Q$	$Q \vee R$	$Q \wedge R$	$(Q \vee R) \vee (Q \wedge R)$	$\neg(P \vee Q)$	$[(Q \vee R) \vee (Q \wedge R)] \vee \neg(P \vee Q)$
	T	T			T	T	F	T
	T	T			T	T	F	T
	F	T			F	T	F	T
	F	T			F	T	T	T
	T	F			F	T	F	T
	T	F			F	T	F	T
	F	F			F	F	F	F
	F	F			F	F	T	T

46.

P	Q	R	$P \vee R$	$Q \vee P$	$\neg Q$	$(Q \vee P) \vee P$	$\neg Q \vee (P \vee R)$	$[\neg Q \vee (P \vee R)] \wedge [(Q \vee P) \vee P]$
\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{F}	\bar{T}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{F}
\bar{F}	\bar{T}	\bar{F}	\bar{F}	\bar{T}	\bar{F}	\bar{T}	\bar{F}	\bar{F}

47.

P	Q	R	$P \vee R$	$P \wedge P$	$P \wedge Q$	$(P \vee R) \vee (P \wedge P)$	$\neg(P \wedge Q)$	$[(P \vee R) \vee (P \wedge P)] \supset \neg(P \wedge Q)$
\bar{T}	\bar{T}	\bar{T}		\bar{T}		\bar{T}	\bar{F}	\bar{F}
\bar{F}	\bar{T}	\bar{T}		\bar{F}		\bar{T}	\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{T}		\bar{T}		\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{F}	\bar{T}		\bar{F}		\bar{T}	\bar{T}	\bar{T}
\bar{T}	\bar{T}	\bar{F}		\bar{T}		\bar{T}	\bar{F}	\bar{F}
\bar{F}	\bar{T}	\bar{F}		\bar{F}		\bar{F}	\bar{T}	\bar{T}
\bar{T}	\bar{F}	\bar{F}		\bar{T}		\bar{T}	\bar{T}	\bar{T}
\bar{F}	\bar{F}	\bar{F}		\bar{F}		\bar{F}	\bar{T}	\bar{T}

48.

Q	R	$Q \vee R$	$Q \wedge R$	$(Q \wedge R) \wedge R$	$(Q \vee R) \supset [(Q \wedge R) \wedge R]$	$R \vee \{(Q \vee R) \supset [(Q \wedge R) \wedge R]\}$	$\neg(R \vee \{(Q \vee R) \supset [(Q \wedge R) \wedge R]\})$

49.

Q	R	$Q \supset Q$	$R \supset Q$	$(Q \supset Q) \supset R$	$\neg(R \supset Q)$	$\neg(R \supset Q) \supset [(Q \supset Q) \supset R]$	$\neg\{\neg(R \supset Q) \supset [(Q \supset Q) \supset R]\}$
\bar{T}	\bar{T}		\bar{T}				
\bar{F}	\bar{T}		\bar{F}				
\bar{T}	\bar{F}		\bar{T}				
\bar{F}	\bar{F}		\bar{T}				

50.

P	Q	R	$P \supset Q$	$P \supset R$	$Q \wedge Q$	$R \vee (Q \wedge Q)$	$(P \supset Q) \supset (P \supset R)$	$[R \vee (Q \wedge Q)] \supset [(P \supset Q) \supset (P \supset R)]$
	\bar{T}	\bar{T}		\bar{T}				\bar{T}
	\bar{T}	\bar{T}		\bar{T}				\bar{T}
	\bar{F}	\bar{T}		\bar{T}				\bar{T}
	\bar{F}	\bar{T}		\bar{T}				\bar{T}
	\bar{T}	\bar{F}		\bar{F}				\bar{F}
	\bar{T}	\bar{F}		\bar{T}				\bar{T}
	\bar{F}	\bar{F}		\bar{F}				\bar{T}
	\bar{F}	\bar{F}		\bar{T}				\bar{T}