1065
IFT [redacted] semaine 1

8. a) I did not buy a lottery ticket this week.

b) I bought a lottery ticket this week or won the 1M$ jackpot.

c) I bought a lottery ticket this week so I won the 1M$ jackpot.

d) I bought a lottery ticket this week and won the 1M$.

e) I bought a lottery ticket this week if and only if I won the 1M$ jackpot.

f) I did not buy a lottery ticket this week, so I did not win the 1M$ jackpot.

[redacted]...

g) I did not buy... and did not win...

h) I did not buy... or I bought... and won...

18. a) [redacted]
true, false → ~~false~~

b) true, false → false

c) false, true → false

d) true, true → true

32.

a)

p	$\neg p$	$p \to \neg p$
0	1	1
1	0	0

b)

p	$\neg p$	$\neg p \to p$	$p \leftrightarrow \neg p$
0	1	0	0
1	0	1	0

c)

p	q	$p \vee q$	$p \oplus (p \vee q)$
0	0	0	0
0	1	1	1
1	0	1	0
1	1	1	0

d)

p	q	$p \wedge q$	$p \vee q$	$(p \wedge q) \to (p \vee q)$
0	0	0	0	1
0	1	0	1	1
1	0	0	1	1
1	1	1	1	1

e)

p	q	$\neg p$	$q \to \neg p$	$p \leftrightarrow q$	$(q \to \neg p) \leftrightarrow (p \leftrightarrow q)$
0	0	1	1	1	1
0	1	1	1	0	0
1	0	0	1	0	0
1	1	0	0	1	0

f)

p	q	$\neg q$	$p \leftrightarrow q$	$p \leftrightarrow \neg q$	$(p \leftrightarrow q) \oplus (p \leftrightarrow \neg q)$
0	0	1	1	0	1
0	1	0	0	1	1
1	0	1	0	1	1
1	1	0	1	0	1

$r \leftrightarrow$ "	$(r \leftrightarrow b) \vee (r \leftrightarrow d) \vee (b \wedge d)$	$r \leftrightarrow b$	$r \leftrightarrow d$	$(b \wedge d)$	r	b	d (p
1	0	1	1	0	0	0	0
1	0	0	1	0	1	0	0
1	0	1	0	0	0	1	0
1	0	0	1	1	1	1	0
1	0	1	0	0	0	0	1
1	0	0	1	0	1	0	1
1	0	1	0	0	0	1	1
1	0	0	1	1	1	1	1

$b \leftrightarrow [(b \leftrightarrow d) \vee d]$	$(b \leftrightarrow d) \vee d$	$(b \leftrightarrow d)$	b	d (2
1	0	1	0	0
1	0	1	1	0
1	0	0	0	1
1	1	1	1	1

$(r \leftrightarrow d) \leftrightarrow [(r \leftrightarrow b) \vee (b \leftrightarrow d)]$	$(r \leftrightarrow b) \vee (b \leftrightarrow d)$	$r \leftrightarrow d$	$r \leftrightarrow b$	$b \leftrightarrow d$	r	b	d (q
1	1	1	1	1	0	0	0
1	1	1	1	1	1	0	0
1	0	1	0	1	0	1	0
1	0	1	0	1	1	1	0
1	0	0	1	0	0	0	1
1	0	0	1	0	1	0	1
1	0	1	0	0	0	1	1
1	1	1	1	1	1	1	1

$b \leftrightarrow [(b \wedge d) \vee d_\perp]$	$(b \wedge d) \vee d_\perp$	$b \wedge d$	$d_\perp$	$\neg p$	$p \vee q$	b	d (p. 01
1	0	0	1	0	1	0	0
1	1	1	1	0	1	1	0
1	0	1	0	1	1	0	1
1	0	1	0	1	1	1	1

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11. a) $(p \wedge q) \to p \equiv \neg(p \wedge q) \vee p$

$\equiv \neg p \vee \neg q \vee p$

$\equiv p \vee \neg p \vee \neg q \equiv$

$\equiv 1 \vee p \equiv 1 \equiv$

b) $p \to (p \vee q) \equiv \neg p \vee (p \vee q) \equiv (p \wedge p) \vee q$

$\equiv 1 \vee q \equiv 1$

c) $\neg p \to (p \leftrightarrow q) \equiv p \vee (p \to q) \equiv$

$\equiv p \vee (\neg p \vee q) \equiv (p \vee \neg p) \vee q \equiv$

$\equiv 1 \vee q \equiv 1$

d) $(p \vee q) \to (p \to q) \equiv (\neg p \wedge \neg q) \vee (p \to q) \equiv$

$\equiv \neg p \wedge \neg q \vee \neg p \vee q \equiv$

$\equiv \neg p \vee \neg q \vee \neg p \vee q \equiv$

$\equiv \neg p \vee p \vee \neg q \vee q \equiv$

$\equiv 1 \vee 1 \equiv 1$

e) $\neg(p \to q) \to p \equiv p \vee (p \to q) \equiv$

$\equiv p \vee (\neg p \vee q) \equiv$

$\equiv (p \vee \neg p) \vee q \equiv$

$\equiv 1 \vee q \equiv 1$

f) $\neg(p \to q) \to (b \leftarrow d) \equiv (p \to q) \wedge \neg q$

$\equiv \neg p \vee q \wedge \neg q$

$\equiv \neg p \wedge q \wedge d \vee \neg d$

$\equiv 1 \wedge d \vee \neg d \equiv$

$1 \equiv \top$