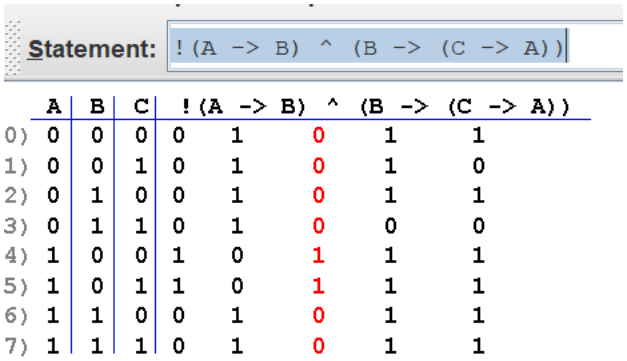
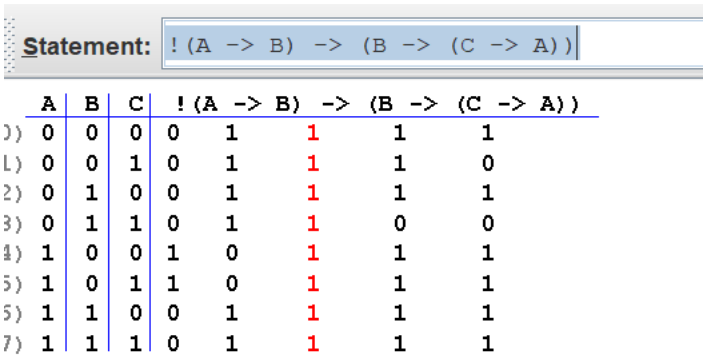
2)



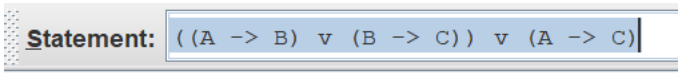
	A	B	C	!(A -> B)	^	(B -> (C -> A))
0)	0	0	0	0	1	0	1	1
1)	0	0	1	0	1	0	1	0
2)	0	1	0	0	1	0	1	1
3)	0	1	1	0	1	0	0	0
4)	1	0	0	1	0	1	1	1
5)	1	0	1	1	0	1	1	1
6)	1	1	0	0	1	0	1	1
7)	1	1	1	0	1	0	1	1

3)



	A	B	C	!(A -> B)	->	(B -> (C -> A))
0)	0	0	0	0	1	1	1	1
1)	0	0	1	0	1	1	1	0
2)	0	1	0	0	1	1	1	1
3)	0	1	1	0	1	1	0	0
4)	1	0	0	1	0	1	1	1
5)	1	0	1	1	0	1	1	1
6)	1	1	0	0	1	1	1	1
7)	1	1	1	0	1	1	1	1

4)



	A	B	C	((A -> B)	v	(B -> C))	v	(A -> C)
0)	0	0	0	1	1	1	1	1
1)	0	0	1	1	1	1	1	1
2)	0	1	0	1	1	0	1	1
3)	0	1	1	1	1	1	1	1
4)	1	0	0	0	1	1	1	0
5)	1	0	1	0	1	1	1	1
6)	1	1	0	1	1	0	1	0
7)	1	1	1	1	1	1	1	1

5)

Statement: (A v B) -> (B v A)

	A	B	(A v B)	->	(B v A)
0)	0	0	0	1	0
1)	0	1	1	1	1
2)	1	0	1	1	1
3)	1	1	1	1	1

6)

Statement: (A v (B ^ C)) -> ((A v B) ^ (A v C))

	A	B	C	(A v (B ^ C))	->	((A v B) ^ (A v C))
0)	0	0	0	0	1	0
1)	0	0	1	0	1	0
2)	0	1	0	0	1	0
3)	0	1	1	1	1	1
4)	1	0	0	1	1	1
5)	1	0	1	1	1	1
6)	1	1	0	1	1	1
7)	1	1	1	1	1	1

7)

1:	$(P \rightarrow Q) \vee (P \rightarrow R)$	premise
2:	P	assumption
3:	$P \rightarrow Q$	assumption
4:	Q	→ elim 3,2
5:	$Q \vee R$	∨ intro 4
6:	$P \rightarrow R$	assumption
7:	R	→ elim 6,2
8:	$Q \vee R$	∨ intro 7
9:	$Q \vee R$	∨ elim 1,3-5,6-8
10:	$P \rightarrow (Q \vee R)$	→ intro 2-9

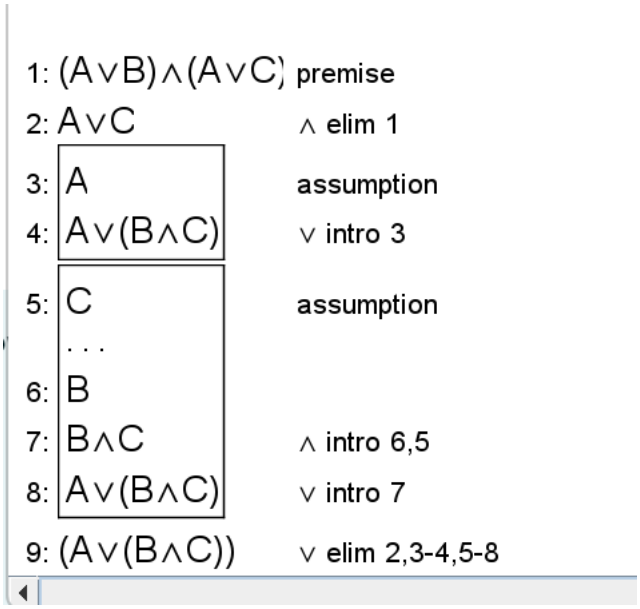
8)

1:	$(A \to B) \wedge (A \to C)$	assumption
2:	A	assumption
3:	$A \to B$	$\wedge$ elim 1
4:	B	$\to$ elim 3,2
5:	$A \to C$	$\wedge$ elim 1
6:	C	$\to$ elim 5,2
7:	$B \wedge C$	$\wedge$ intro 4,6
8:	$A \to (B \wedge C)$	$\to$ intro 2-7
9:	$((A \to B) \wedge (A \to C)) \to (A \to (B \wedge C))$	$\to$ intro 1-8

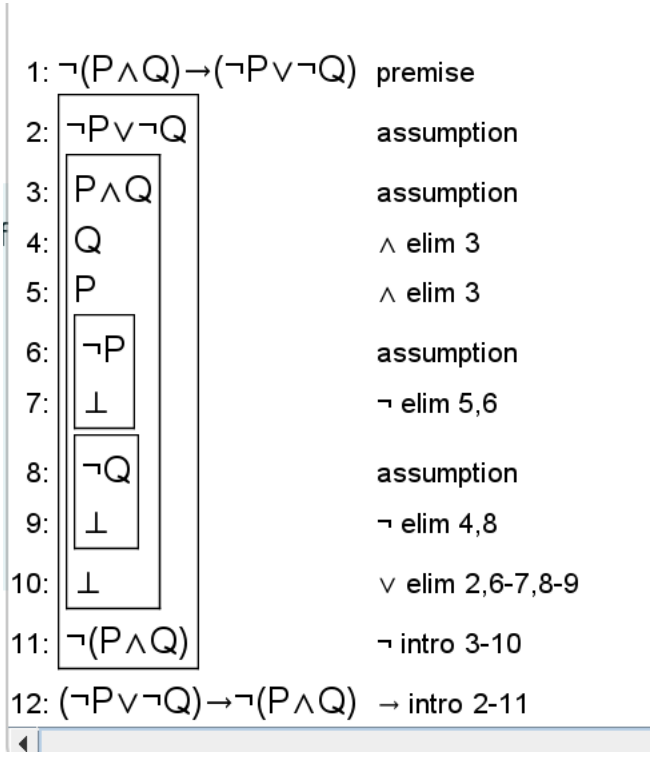
9)

1:	$E \to (F \wedge G)$	premise
2:	E	assumption
3:	$F \wedge G$	$\to$ elim 1,2
4:	F	$\wedge$ elim 3
5:	$E \to F$	$\to$ intro 2-4
6:	E	assumption
7:	$F \wedge G$	$\to$ elim 1,6
8:	G	$\wedge$ elim 7
9:	$E \to G$	$\to$ intro 6-8
10:	$(E \to F) \wedge (E \to G)$	$\wedge$ intro 5,9

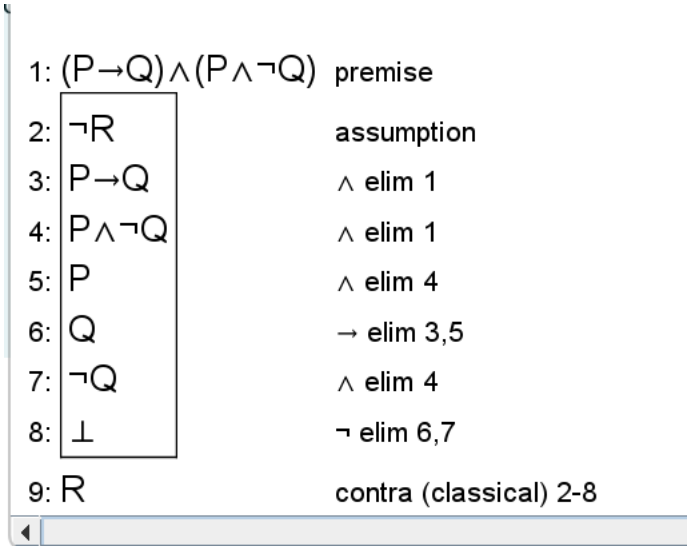
10)


1: (A∨B)∧(A∨C) premise
2: A∨C ∧ elim 1
3: A assumption
4: A∨(B∧C) ∨ intro 3
5: C assumption
. . .
6: B
7: B∧C ∧ intro 6,5
8: A∨(B∧C) ∨ intro 7
9: (A∨(B∧C)) ∨ elim 2,3-4,5-8

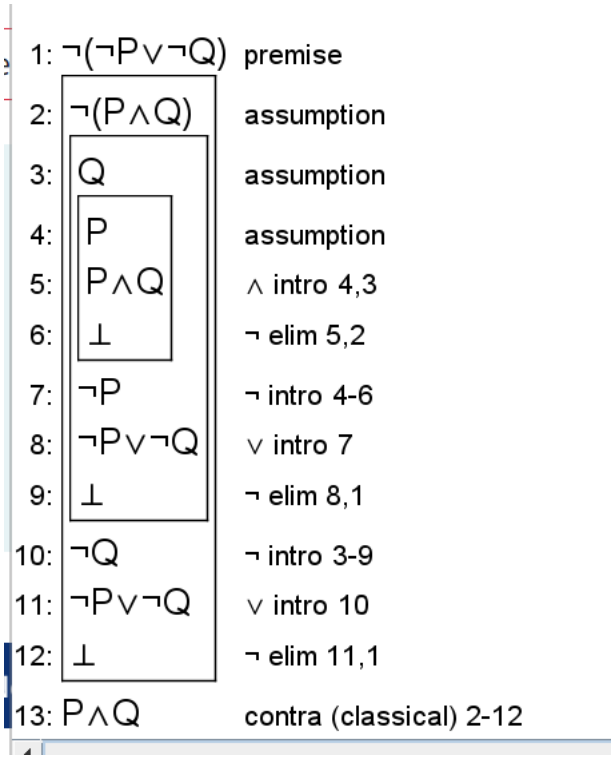
11)


1: ¬(P∧Q)→(¬P∨¬Q) premise
2: ¬P∨¬Q assumption
3: P∧Q assumption
4: Q ∧ elim 3
5: P ∧ elim 3
6: ¬P assumption
7: ⊥ ¬ elim 5,6
8: ¬Q assumption
9: ⊥ ¬ elim 4,8
10: ⊥ ∨ elim 2,6-7,8-9
11: ¬(P∧Q) ¬ intro 3-10
12: (¬P∨¬Q)→¬(P∧Q) → intro 2-11

12)


1: (P→Q)∧(P∧¬Q) premise
2: ¬R assumption
3: P→Q ∧ elim 1
4: P∧¬Q ∧ elim 1
5: P ∧ elim 4
6: Q → elim 3,5
7: ¬Q ∧ elim 4
8: ⊥ ¬ elim 6,7
9: R contra (classical) 2-8

13)


1: ¬(¬P∨¬Q) premise
2: ¬(P∧Q) assumption
3: Q assumption
4: P assumption
5: P∧Q ∧ intro 4,3
6: ⊥ ¬ elim 5,2
7: ¬P ¬ intro 4-6
8: ¬P∨¬Q ∨ intro 7
9: ⊥ ¬ elim 8,1
10: ¬Q ¬ intro 3-9
11: ¬P∨¬Q ∨ intro 10
12: ⊥ ¬ elim 11,1
13: P∧Q contra (classical) 2-12

14)

1:	$\neg(P \wedge Q)$	premise
2:	$\neg(\neg P \vee \neg Q)$	assumption
3:	P	assumption
4:	$\neg Q$	assumption
5:	$\neg P \vee \neg Q$	$\vee$ intro 4
6:	$\perp$	$\neg$ elim 5,2
7:	Q	contra (classical) 4-6
8:	$P \wedge Q$	$\wedge$ intro 3,7
9:	$\perp$	$\neg$ elim 8,1
10:	$\neg P$	$\neg$ intro 3-9
11:	$\neg P \vee \neg Q$	$\vee$ intro 10
12:	$\perp$	$\neg$ elim 11,2
13:	$\neg P \vee \neg Q$	contra (classical) 2-12

15)

1:	$(P \wedge \neg P) \vee (Q \wedge \neg Q)$	assumption
2:	$P \wedge \neg P$	assumption
3:	P	$\wedge$ elim 2
4:	$\neg P$	$\wedge$ elim 2
5:	$\perp$	$\neg$ elim 3,4
6:	$Q \wedge \neg Q$	assumption
7:	Q	$\wedge$ elim 6
8:	$\neg Q$	$\wedge$ elim 6
9:	$\perp$	$\neg$ elim 7,8
10:	$\perp$	$\vee$ elim 1,2-5,6-9
11:	$\neg((P \wedge \neg P) \vee (Q \wedge \neg Q))$	$\neg$ intro 1-10

16)