

Compromiso 1 - Deducción Natural y Resolución en Lógica Proposicional

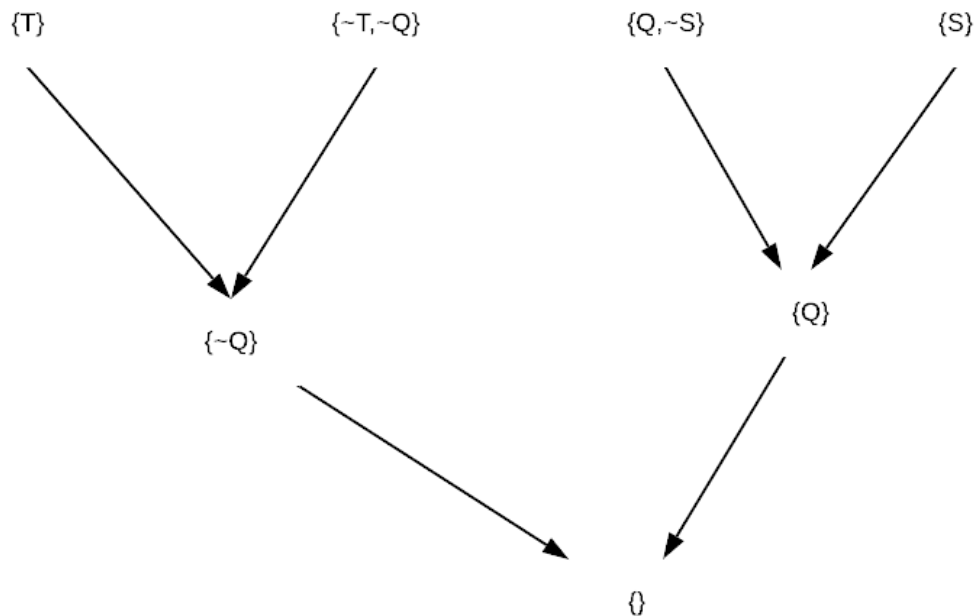
Miguel Estevez

20170200

$$\{T, T \rightarrow \neg Q, \neg Q \rightarrow \neg S\} \vdash \neg S$$

1. T
2. $T \rightarrow \neg Q$
3. $\neg Q \rightarrow \neg S$

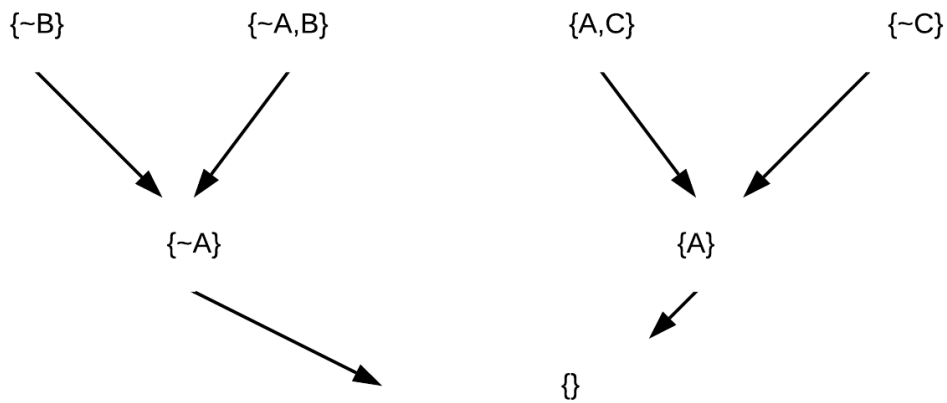
-
4. $\neg Q$ *MP 1, 2*
 5. $\neg S$ *MP 3, 4*



$$\{\neg B, A \rightarrow B, \neg A \rightarrow C\} \vdash C$$

1. $\neg B$
2. $A \rightarrow B$
3. $\neg A \rightarrow C$

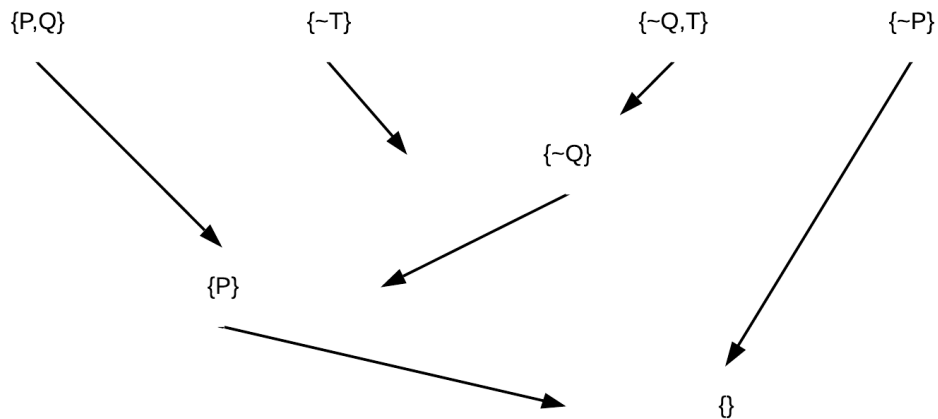
-
4. $\neg A$ *MT 1, 2*
 5. C *MP 3, 4*



$$\{P \vee Q, \neg T, Q \rightarrow T\} \vdash P$$

1. $P \vee Q$
2. $\neg T$
3. $Q \rightarrow T$

-
- | | |
|-------------|----------------|
| 4. $\neg Q$ | <i>MT 2, 3</i> |
| 5. P | <i>SD 1, 4</i> |

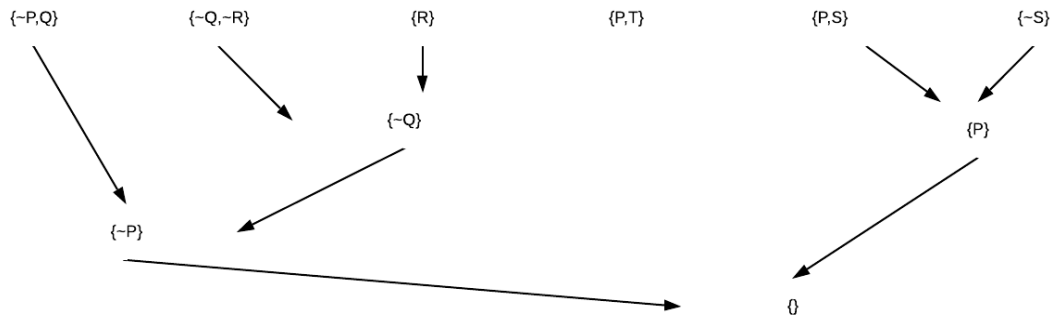


$$\{P \rightarrow Q, Q \rightarrow \neg R, R, P \vee (T \wedge S)\} \vdash S$$

1. $P \rightarrow Q$
2. $Q \rightarrow \neg R$
3. R
4. $P \vee (T \wedge S)$

-
- | | |
|------------------|----------------|
| 5. $\neg \neg R$ | <i>DN 3</i> |
| 6. $\neg Q$ | <i>MT 2, 5</i> |

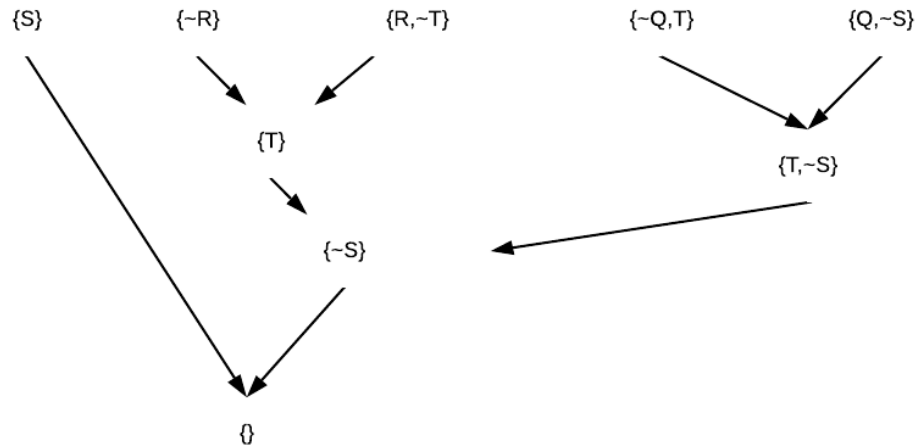
7. $\neg P$ *MT 1, 6*
8. $T \wedge S$ *SD 4, 7*
9. S *EC 8*



$$\{S \wedge \neg R, R \vee \neg T, Q \rightarrow T\} \vdash \neg Q \wedge S$$

1. $S \wedge \neg R$
2. $R \vee \neg T$
3. $Q \rightarrow T$

-
4. $\neg R$ *EC 1*
 5. $\neg T$ *SD 2, 4*
 6. $\neg Q$ *MT 3, 5*
 7. S *EC 1*
 8. $\neg Q \wedge S$ *IC 6, 7*

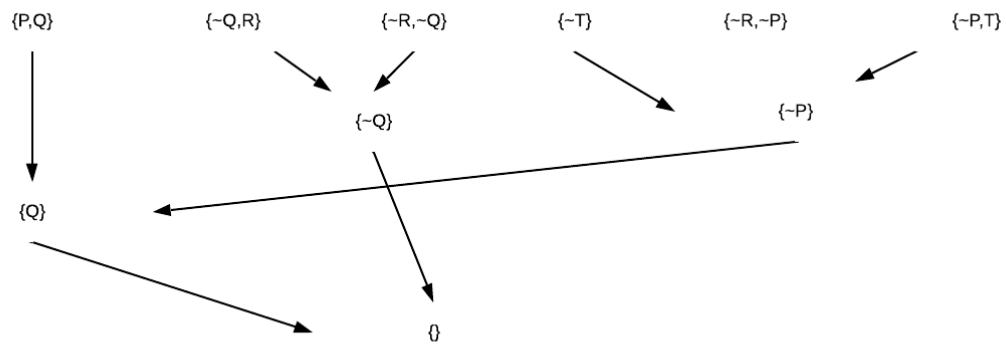


$$\{P \vee Q, Q \rightarrow R, P \rightarrow T, \neg T\} \vdash R \wedge (P \vee Q)$$

1. $P \vee Q$
2. $Q \rightarrow R$
3. $P \rightarrow T$
4. $\neg T$

-
5. $\neg P$ *MT 3, 4*
 6. Q *SD 1, 5*
 7. R *MP 2, 6*

$$8. R \wedge (P \vee Q) \quad IC\ 1,7$$



$$\{P \rightarrow R\} \vdash (P \vee Q) \rightarrow (P \vee R)$$

Caso que no da

Q: V

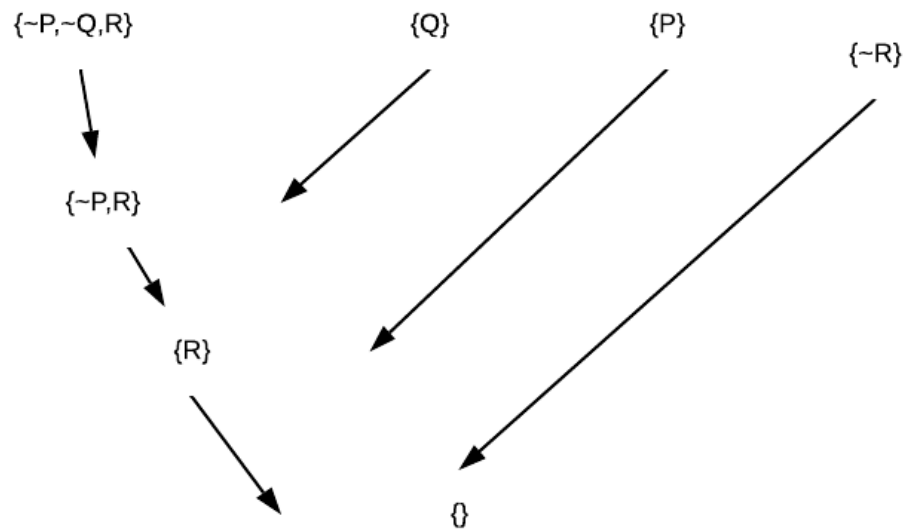
P: F

R: F

$$\{P \rightarrow (Q \rightarrow R)\} \vdash Q \rightarrow (P \rightarrow R)$$

$$1. P \rightarrow (Q \rightarrow R)$$

2. $\neg(Q \rightarrow (P \rightarrow R))$	Hipotesis
3. $Q \wedge \neg(P \rightarrow R)$	NI 2
4. $Q \wedge P \wedge \neg R$	NI 3
5. P	EC 4
6. $Q \rightarrow R$	MP 1, 5
7. Q	EC 4
8. R	MP 6, 7
9. $\neg R$	EC 4
10. $R \wedge \neg R$	IC 8, 9
11. $Q \rightarrow (P \rightarrow R)$	RA 2 – 10



$$\{(P \rightarrow Q) \wedge (P \rightarrow R)\} \vdash P \rightarrow (Q \wedge R)$$

$$1. (P \rightarrow Q) \wedge (P \rightarrow R)$$

2. P	Hipotesis
3. $P \rightarrow Q$	<i>EC</i> 1
4. Q	<i>MP</i> 2, 3
5. $P \rightarrow R$	<i>EC</i> 1
6. R	<i>MP</i> 2, 5
7. $Q \wedge R$	<i>IC</i> 4, 6
8. $P \rightarrow (Q \wedge R)$	<i>II</i> 2 – 7

