

83
6) 2)

$$\begin{array}{c}
 \frac{\frac{\text{ax}}{\Gamma \vdash P \Rightarrow Q \Rightarrow T} \quad \frac{\text{ax}}{\Gamma \vdash P} \rightarrow_e \quad \frac{\text{ax}}{\Gamma \vdash P \Rightarrow Q} \quad \frac{\text{ax}}{\Gamma \vdash P}}{\Gamma \vdash Q} \Rightarrow_e \\
 \hline
 \frac{\Gamma \vdash P \Rightarrow Q \Rightarrow T, \Gamma \vdash P \Rightarrow Q, \Gamma \vdash T}{\Gamma \vdash P \Rightarrow Q \Rightarrow T} \Rightarrow_e \\
 \hline
 \frac{(P \Rightarrow Q \Rightarrow T), P \Rightarrow Q \vdash P \Rightarrow T}{(P \Rightarrow Q \Rightarrow T) \vdash (P \Rightarrow Q) \Rightarrow P \Rightarrow T} \Rightarrow_i \\
 \hline
 \frac{(P \Rightarrow Q \Rightarrow T) \vdash (P \Rightarrow Q) \Rightarrow P \Rightarrow T}{\vdash (P \Rightarrow Q \Rightarrow T) \Rightarrow (P \Rightarrow Q) \Rightarrow P \Rightarrow T} \Rightarrow_i
 \end{array}$$

11 3)

$$\begin{array}{c}
 \frac{\frac{\text{ax}}{\Gamma \vdash P \Rightarrow \perp} \quad \frac{\text{ax}}{\Gamma \vdash P}}{\Gamma \vdash P \Rightarrow \perp, P \vdash \perp} \Rightarrow_e \\
 \hline
 \frac{P \Rightarrow \perp \vdash \neg P}{\vdash (P \Rightarrow \perp) \Rightarrow \neg P} \Rightarrow_i
 \end{array}$$

v/ 4)

$$\begin{array}{c}
 \frac{\frac{\text{ax}}{\Gamma \vdash P \Rightarrow Q} \quad \frac{\text{ax}}{\Gamma \vdash P} \Rightarrow_e \quad \frac{\text{ax}}{\Gamma \vdash \neg Q}}{\Gamma \vdash P \Rightarrow Q, \neg Q, P \vdash \perp} \Rightarrow_e \\
 \hline
 \frac{P \Rightarrow Q, \neg Q \vdash \neg P}{P \Rightarrow Q \vdash (\neg Q \Rightarrow \neg P)} \Rightarrow_i \\
 \hline
 \frac{P \Rightarrow Q \vdash (\neg Q \Rightarrow \neg P)}{\vdash (P \Rightarrow Q) \Rightarrow (\neg Q \Rightarrow \neg P)} \Rightarrow_i
 \end{array}$$

VII) \rightarrow

$$\begin{array}{l}
 \text{ox} \\
 \hline
 \Gamma_1 \vdash P \quad \text{v.i.} \quad \text{ox} \\
 \hline
 \Gamma_1 \vdash (P \vee \neg P) \quad \text{P.v.i.} \\
 \hline
 \Gamma_1, \neg(P \vee \neg P) \vdash \perp \quad \neg i \\
 \hline
 \neg(P \vee \neg P) \vdash \neg P \quad \neg(P \vee \neg P) \vdash \neg \neg P \quad \text{A.I.} \\
 \hline
 \neg(P \vee \neg P) \vdash (\neg P \wedge \neg \neg P) \\
 \hline
 \vdash \neg(P \vee \neg P) \Rightarrow (\neg P \wedge \neg \neg P)
 \end{array}$$

 \leq

[illegible]

7) 1)

$$\begin{array}{l} \text{ax} \\ \hline \Gamma \\ \hline \frac{\Gamma \vdash \neg T \Rightarrow \perp, \neg T \vdash \neg T \Rightarrow \perp}{\Gamma \vdash \neg T} \text{ax} \\ \hline \Rightarrow e \\ \Gamma \vdash \neg T \Rightarrow \perp, \neg T \vdash \perp \\ \hline \text{Pbc} \\ \Gamma \vdash \neg T \Rightarrow \perp \vdash T \\ \hline \Rightarrow i \\ \vdash (\neg T \Rightarrow \perp) \Rightarrow T \end{array}$$

iii)

$$\frac{}{\vdash T \vee \neg T} \text{LEM} \quad \checkmark$$

vi)

$$\frac{\frac{\frac{}{\vdash T \vee \neg T} \text{LEM} \quad \frac{\frac{}{\vdash T \Rightarrow P} \text{as} \quad \frac{}{\vdash \neg T \Rightarrow P} \text{as}}{\vdash T \Rightarrow P} \Rightarrow E \quad \frac{}{\vdash \neg T \Rightarrow P} \text{ANÁLOGO.}}{\vdash T \vee \neg T \quad \vdash T \Rightarrow P \quad \vdash \neg T \Rightarrow P} \vee e$$

$$\frac{\vdash T \Rightarrow P, \vdash \neg T \Rightarrow P}{\vdash T \Rightarrow P} \Rightarrow I$$

$$\frac{\vdash T \Rightarrow P \quad \vdash (\neg T \Rightarrow P) \Rightarrow P}{\vdash (T \Rightarrow P) \Rightarrow (\neg T \Rightarrow P) \Rightarrow P} \Rightarrow I$$

REVISAR SI ES IMPORTANTE LA PARTE DE SEMANTICA Y LA DE CORRECTITUD Y COMPLETITUD.

EJERCICIOS 17 Y 18 PENDIENTES.