José Douglas Gondim Soares, 485347

1-

I- ((F → (F → F)) → (F → F)) → F

X → X (R1)

X → V (R2)

V → F (R3)

F = "Sei, lá!"

II- ((F → F) → ((F → F) → F)) → F

X → X (R1)

V → X (R3)

X = ((F → F) → F)

X → X (R1)

V → F (R3)

F → F

X → X (R1)

V = "Sim, claro!".

②-) $(C \to A) \to (C \to (A \to A))$

[1] $A \to ((A \to A) \to A)$, $p=A$, $q=(A \to A)$, usando H1.
[2] $(A \to ((A \to A) \to A)) \to ((A \to (A \to A)) \to (A \to A))$, $p=A$, $q=(A \to A)$ e $r=A$, usando H2.
[3] $((A \to (A \to A)) \to (A \to A))$, M.P. linhas 1 e 2.
[4] $A \to (A \to A)$, $p=A$, $q=A$, usando H1.
[5] $(A \to A)$ M.P. linhas 3 e 4.
[6] $(A \to A) \to (C \to (A \to A))$, $p=(A \to A)$, $q=C$, usando H1.
[7] $(C \to (A \to A))$, M.P. linhas 5 e 6.
[8] $(C \to (A \to A)) \to ((C \to A) \to (C \to (A \to A)))$, $p=(C \to (A \to A))$, $q=(C \to A)$, usando H1.
[9] $(C \to A) \to (C \to (A \to A))$, M. P. linhas 7 e 8.

③ a) $((A \to B) \to C) \to (B \to C)$

[1] $(A \to B) \to C$, inicio.
[2] $B \to ((A \to B) \to C)$, R2 linha 1.
[3] $(B \to (A \to B)) \to (B \to C)$, usando dist na linha 2.
[4] $B \to (A \to B)$, $p=B$, $q=A$, usando H1.
[5] $(B \to C)$, M.P. linhas 3 e 4.

b) $((B \to C) \to D) \to ((A \to (B \to C)) \to D)$

④ $(A \to (B \to C)) \Rightarrow ((A \land B) \to C)$

[1] $A \to (B \to C)$, inicio.
[2] $(A \land B) \to (A \to (B \to C))$, R2 linha 1.
[3] $((A \land B) \to A) \to ((A \land B) \to (B \to C))$, dist linha 2.
[4] $(A \land B) \to A$, $p = A$, $q = B$, usando H3.
[5] $(A \land B) \to (B \to C)$, M. P. linhas 3 e 4.
[6] $((A \land B) \to B) \to ((A \land B) \to C)$, dist linha 5
[7] $(A \land B) \to B$, $p = A$, $q = B$, usando H4.
[8] $((A \land B) \to C)$, M. P. linhas 6 e 7. ■

Declaro não trocar informações da prova com colegas e nem pesquisar na internet.

José Douglas gondim soares.