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Prova Lógica

① a) $(C \lor B) \to (B \lor C)$

[1] $(C \to (B \lor C)) \to ((B \to (B \lor C)) \to ((C \lor B) \to (B \lor C)))$, $p = C$, $q = B$ e $r = (B \lor C)$, usando H8.

[2] $C \to (B \lor C)$, $q = C$ e $p = B$, usando H7.

[3] $((B \to (B \lor C)) \to ((C \lor B) \to (B \lor C)))$, M.P. linhas 1 e 2.

[4] $B \to (B \lor C)$, $p = B$, $q = C$, usando H6.

[5] $(C \lor B) \to (B \lor C)$, M.P. linhas 3 e 4.

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

[1] $(A \land (B \land C)) \to (B \land C)$, $p = A$, $q = (B \land C)$, usando H5.

[2] $(B \land C) \to B$, $p = B$ e $q = C$, usando H4.

[3] $((A \land (B \land C)) \to (B \land C)) \to (((B \land C) \to B) \to ((A \land (B \land C)) \to B))$, $p = (A \land (B \land C))$, $q = (B \land C)$ e $r = B$, usando transitividade.

[4] $((B \land C) \to B) \to ((A \land (B \land C)) \to B)$, M.P. linhas 1 e 3.

[5] $(A \land (B \land C)) \to B$, M.P. linhas 2 e 4.

② b) $(A \to (B \to (C \to D))) \to (A \to ((B \land C) \to D)))$

[1] $(B \to (C \to D)) \to ((B \land C) \to D)$, $p = B$, $q = C$, $r = D$, usando 2.2.

[2] $(A \to (B \to (C \to D))) \to (A \to ((B \land C) \to D)))$, Adiciona A com [1].

CONTINUA

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2- a) $C \to (B \to (A \lor (B \land C)))$

[1] $((B \land C) \to (A \lor (B \land C))) \to (B \to (C \to (A \lor (B \land C))))$, $p = B$, $q = C$, $r = (A \lor (B \land C))$, usando J3.

[2] $(B \land C) \to (A \lor (B \land C))$, $p = A$, $q = (B \land C)$, usando H7.

[3] $B \to (C \to (A \lor (B \land C)))$, M.P. linhas 1 e 2.

[4] $C \to (B \to (A \lor (B \land C)))$, usando Inv linha 3.

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

[1] $(A \land B) \to ((A \land B) \lor (A \land C))$, $p = (A \land B)$, $q = (A \land C)$, H6

[2] $((A \land B) \land (A \land C)) \to (A \land B)$, $p = (A \land B)$, $q = (A \land C)$, H

[3] $((A \land B) \land (A \land C)) \to ((A \land B) \lor (A \land C))$, transitividade linhas 1 e 2.

3- $(A \to (B \to (C \to D))) \to (A \to (B \to (C \to E))) \to (A \to (B \to (C \to (D \land E))))$

$\equiv$ Equivalente a

$(A \to (B \to C)) \to (D \to (E \to (D \land E)))$

ou então

$((A \to (B \to C)) \to D) \to (((A \to (B \to C)) \to E) \to ((A \to (B \to C)) \to (D \land E)))$; $p = (A \to (B \to C))$, $q = D$ e $r = E$, usando J1.