

M = maço de notas

C1, C2, C3 - caixas

$D(x,y)$  = x dentro de y

a)

1.  $D(M,C1) \vee D(M,C2) \vee D(M,C3) \leftarrow$  forma clausal
2.  $D(M,C1) \Rightarrow \neg D(M,C2) \ \& \ \neg D(M,C3)$
3.  $D(M,C2) \Rightarrow \neg D(M,C1) \ \& \ \neg D(M,C3)$
4.  $D(M,C3) \Rightarrow \neg D(M,C1) \ \& \ \neg D(M,C2)$
5.  $D(M,C3) \vee \neg D(M,C2) \vee \neg D(M,C3) \leftarrow$  forma clausal
6.  $D(M,C3) \Rightarrow \neg(\neg D(M,C2)) \ \& \ \neg(\neg D(M,C3))$
7.  $\neg D(M,C2) \Rightarrow \neg D(M,C3) \ \& \ \neg(\neg D(M,C3))$
8.  $\neg D(M,C3) \Rightarrow \neg D(M,C3) \ \& \ \neg(\neg D(M,C2))$

b)

9.  $\neg D(M,C1) \vee (\neg D(M,C2) \ \& \ \neg D(M,C3))$  [D.I. 2]
10.  $\neg D(M,C2) \vee (\neg D(M,C1) \ \& \ \neg D(M,C3))$  [D.I. 3]
11.  $\neg D(M,C3) \vee (\neg D(M,C1) \ \& \ \neg D(M,C2))$  [D.I. 4]
12.  $\neg D(M,C3) \vee (D(M,C2) \ \& \ D(M,C3))$  [D.I. e D.N. 6]
13.  $D(M,C2)$  [D.I. e D.N. 7 + elemento neutro]  $\leftarrow$  forma clausal
14.  $D(M,C3) \vee (\neg D(M,C3) \ \& \ D(M,C2))$  [D.I. e D.N. 8]
15.  $(\neg D(M,C1) \vee \neg D(M,C2)) \ \& \ (\neg D(M,C1) \vee \neg D(M,C3))$  [P.D. 9]
16.  $(\neg D(M,C2) \vee \neg D(M,C1)) \ \& \ (\neg D(M,C2) \vee \neg D(M,C3))$  [P.D. 10]
17.  $(\neg D(M,C3) \vee \neg D(M,C1)) \ \& \ (\neg D(M,C3) \vee \neg D(M,C2))$  [P.D. 11]
18.  $\neg D(M,C3) \vee D(M,C2)$  [P.D. 12 + elemento neutro]  $\leftarrow$  forma clausal
19.  $D(M,C3) \vee D(M,C2)$  [P.D. 14 + elemento neutro]  $\leftarrow$  forma clausal
20.  $\neg D(M,C1) \vee \neg D(M,C2)$  [E.C. 15, E.C. 16]  $\leftarrow$  forma clausal
21.  $\neg D(M,C1) \vee \neg D(M,C3)$  [E.C. 15, E.C. 17]  $\leftarrow$  forma clausal
22.  $\neg D(M,C2) \vee \neg D(M,C3)$  [E.C. 16, E.C. 17]  $\leftarrow$  forma clausal

Forma clausal

$\{ D(M,C1) \vee D(M,C2) \vee D(M,C3), D(M,C3) \vee \neg D(M,C2) \vee \neg D(M,C3), \mathbf{D(M,C2)},$   
 $\neg D(M,C3) \vee D(M,C2), D(M,C3) \vee D(M,C2), \neg D(M,C1) \vee \neg D(M,C2),$   
 $\neg D(M,C1) \vee \neg D(M,C3), \neg D(M,C2) \vee \neg D(M,C3) \}$

c)

Um vez que consta  $D(M,C2)$  na forma clausal, fica demonstrado que o maço de notas está na caixa C2.

Outra resolução, considerando apenas as etiquetas, e formalizando de outra forma:

a)

1.  $D(M,C3) \mid \mid \sim D(M,C2) \mid \mid \sim D(M,3)$
2.  $\sim (D(M,C3) \ \& \ \sim D(M,C2))$
3.  $\sim (D(M,C3) \ \& \ \sim D(M,C3))$
4.  $\sim (\sim D(M,C2) \ \& \ \sim D(M,C3))$

b)

5.  $\sim D(M,C3) \mid \mid D(M,C2)$  [L.D. e D.N. 2]
6. Verdadeiro [simpl. 3]
7.  $D(M,C2) \mid \mid D(M,C3)$  [L.D. e D.N. 4]

c)

8.  $D(M,C2) \mid \mid D(M,C2)$  [Resolução 5, 7]
9.  $D(M,C2)$  [simpl. 8]