Lista 01

① a) m = mamífero l = alimenta com leite

$(l \rightarrow m) \wedge (m \rightarrow l)$

b) s = água salgado d = água doce

$(s \vee d) \wedge \sim(s \wedge d)$

c) a = pinguins são aves v = pinguins voam

$a \wedge \sim v$

d) p = pinguim a = avestruz v = voa

$(p \vee a) \rightarrow \sim v$

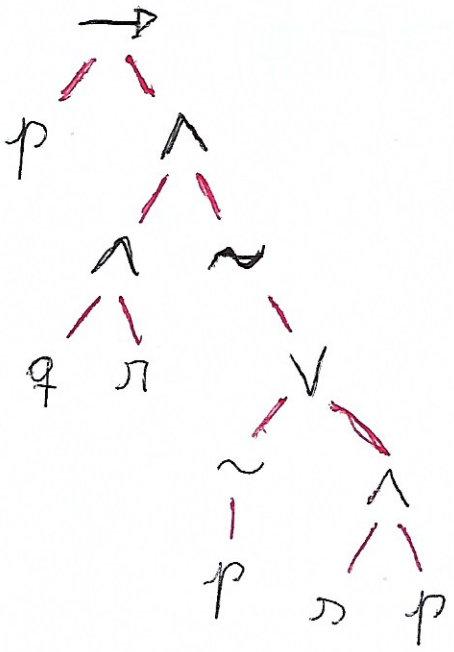
e) b = brasileiro v = votado c = cargo público

$c \rightarrow b \wedge v$

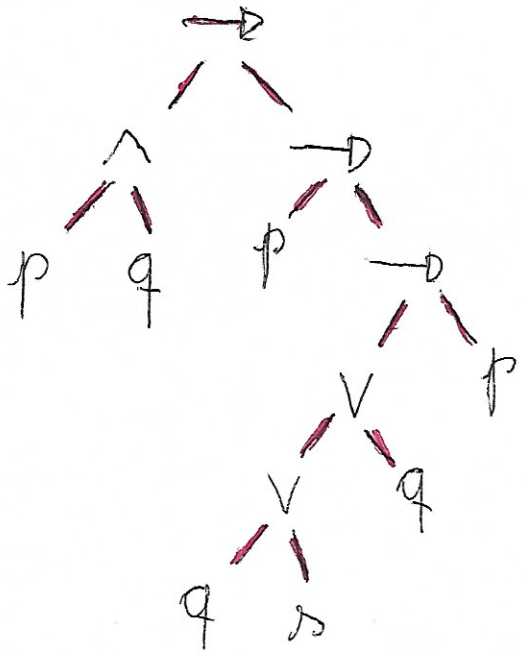
f) b = brasileiro c = gostar de carnaval

$\sim(b \rightarrow c)$

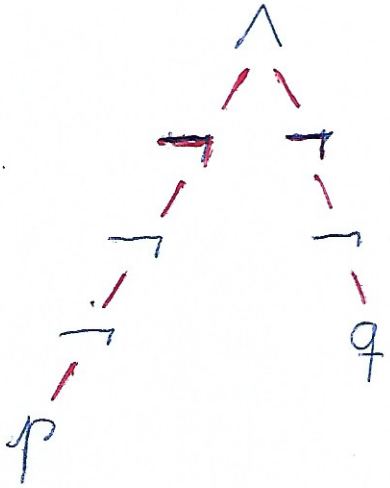
② a) $p \rightarrow ((q \wedge r) \wedge (\sim((\sim p) \vee (s \wedge p))))$



c) $(p \wedge q) \rightarrow (p \rightarrow (((q \vee r) \vee q) \rightarrow p))$

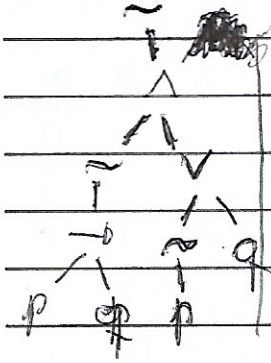


b) $(\neg(\neg(\neg p)) \wedge (\neg(\neg q))$



DOM SEG TER QUA QUI SEX SÁB
DOM LUN MAR MIÉ JUE VIE SÁB

(3) a) $\sim(\sim(p \to q) \wedge (\sim p \vee q))$



					A	B		
p	q	$\sim p$	$\sim q$	$p \to q$	$\sim(p \to q)$	$(\sim p \vee q)$	$A \wedge B$	$\sim(A \wedge B)$
V	V	F	F	V	F	V	F	V
V	F	F	V	F	V	F	F	V
F	V	V	F	V	F	V	F	V
F	F	V	V	V	F	V	F	V

tautologia e satisfazível.

b) $(\sim p) \to ((\sim q) \to p)$

p	q	$\sim p$	$\sim q$	$((\sim q) \to p)$	$(\sim p \to ((\sim q) \to p))$
V	V	F	F	V	V
V	F	F	V	V	V
F	V	V	F	V	V
F	F	V	V	F	F

satisfazível ou falsificável

c) $(p \wedge q) \wedge (r \to (\sim q)) \wedge r$

p	q	r	$\sim q$	$(p \wedge q)$ A	$r \to (\sim q)$ B	$A \wedge B$ C	$C \wedge r$
V	V	V	F	V	F	F	F
V	V	F	F	V	V	V	F
V	F	V	V	F	V	F	F
V	F	F	V	F	V	F	F
F	V	V	F	F	F	F	F
F	V	F	F	F	V	F	F
F	F	V	V	F	V	F	F
F	F	F	V	F	V	F	F

Insatisfazível

d) $p \to ((\sim p) \to p)$

p	$\sim p$	$(\sim p \to p)$	$p \to (\sim p \to p)$
V	F	V	V
F	V	F	V

Tautologia

DOM SEG TER QUA QUI SEX SÁB
DOM LUN MAR MIÉ JUE VIE SÁB

___/___/___

(4) a) $\sim\sim p \vee q \models \sim p \to q$ (correto)

p	q	$\sim p$	$\sim\sim p$	$\sim\sim p \vee q$	$\sim p \to q$
V	V	F	V	V	V
V	F	F	V	V	V
F	V	V	F	V	V
F	F	V	F	F	F

b) $p \to q \models p \to (q \to (p \wedge q))$ (correto)

p	q	$p \to q$	$p \wedge q$	$q \to (p \wedge q)$	$p \to (q \to (p \wedge q))$
V	V	V	V	V	V
V	F	F	F	V	V
F	V	V	F	F	V
F	F	V	F	V	V

4) c) $\sim p \to \sim q, \sim r, p \to r \models q \to r$

p	q	r	$\sim p$	$\sim q$	$\sim r$	$\sim p \to \sim q$	$p \to r$	$q \to r$
V	V	V	F	F	F	V	V	V
V	V	F	F	F	V	V	F	F
V	F	V	F	V	F	V	V	V
V	F	F	F	V	V	V	F	V
F	V	V	V	F	F	F	V	V
F	V	F	V	F	V	F	V	F
F	F	V	V	V	F	V	V	V
F	F	F	V	V	V	V	V	V

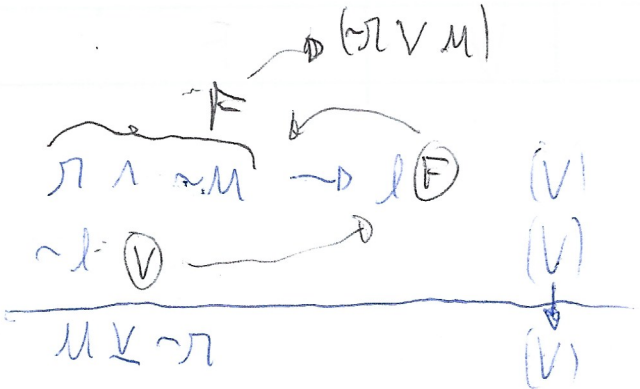
⇒ Correto

(5) R = sei falar russo
M = nasci no URSS
L = tenho facilidade com línguas.

a) 1) $R \wedge \sim M \rightarrow L$
2) $\sim L$
---
3) $(M \vee \sim R) \wedge \sim(M \wedge \sim R)$

R	M	L	$\sim R$	$\sim M$	$\sim L$ (2)	$R \wedge \sim M$	$R \wedge \sim M \rightarrow L$ (1)	$M \vee \sim R$	$M \wedge \sim R$	$\sim(M \wedge \sim R)$	$(M \vee \sim R) \wedge \sim(M \wedge \sim R)$
V	V	V	F	F	F	F	V	V	F	V	V
V	V	F	F	F	V	F	V	V	F	V	V
V	F	V	F	V	F	V	V	F	F	V	F
V	F	F	F	V	V	V	F ✕	F	F	V	F
F	V	V	V	F	F	F	V	V	V	F	F
F	V	F	V	F	V	F	V	V	V	F	F
F	F	V	V	V	F	F	V	V	F	V	V
F	F	F	V	V	V	F	V	V	F	V	V

Argumento inválido!



⑥ e = haver estiagem

q = queda na produção agrícola

g = chove granizo

a) 1. $e \rightarrow q$

2. $g \rightarrow q$

3. q

---

4. $(g \vee e) \wedge \sim(g \wedge e)$

Pela linha 1 da tabela verdade, nota-se que o argumento é inválido.

e	q	g	$e \rightarrow q$	$g \rightarrow q$	$g \vee e$	$g \wedge e$	$\sim(g \wedge e)$	$(g \vee e) \wedge \sim(g \wedge e)$
V	V	V	V	V	V	V	F	F ← Argumento inválido
V	V	F	V	V	V	F	V	V
V	F	V	F	F	V	V	F	F
V	F	F	F	V	V	F	V	V
F	V	V	V	V	V	F	V	V
F	V	F	V	V	F	F	V	F
F	F	V	V	F	V	F	V	V
F	F	F	V	V	F	F	V	F