

25-01-2017

f. $O \rightarrow \text{MAX SOMME}$
 BENEFICIENZA

$X_{ij} : A_{ij}, i \in \{M, F, V\}$
baragli $j \in \{1, 2, 3\}$

$$\max \sum (X_{M1} + X_{M2} + X_{M3} \\ + X_{F1} + \dots + X_{V1} + \dots)$$

20/25/15 \rightarrow SPESA
DIPENDIMENTI.

$$- 20(X_{M1} + X_{M2} + X_{M3}) \\ - 25(X_{F1} + X_{F2} + X_{F3}) \\ - 15(X_{V1} + X_{V2} + X_{V3})$$

- ALTERNATIVA

$$x_i \rightarrow i \in \{M, F, V\}$$

$$y_j \rightarrow j \in \{1, 2, 3\}$$

$$\max \sum (x_{Vj} + x_{Fj} + x_{Mj}) - (20y_1 + 25y_2 + 15y_3)$$

$$X_{ij} = \begin{cases} 1 & \text{if } \{I, F, U\} \\ 0 & \text{otherwise} \end{cases}$$

$$\sum_{i=1}^3 X_{ij} \geq 10 \quad \leftarrow \begin{array}{l} \text{ACCORDIAMENTO} \\ \text{IL 1^ VINCOL} \end{array}$$

$$\begin{cases} 100 X_{n1} \leq 40, \quad 10 X_{n2} \leq 30 \\ X_{n3} \leq 30, \quad X_{M4} \leq 20 \end{cases}$$

ALTERNATIVA

Più GENERALI

$$\begin{aligned} 100 X_n + 10 X_F + 30 X_U &\leq \\ 40 X_1 + 20 X_2 + 30 X_3 & \end{aligned}$$

Più USABILI

$$\frac{200 \text{ h}}{200 \text{ ore}} \rightarrow 200 h = 200 \cdot 60 = 12000$$

$$\sum_{i=1}^3 X_{nj} + \sum_{j=1}^3 X_{fj} \dots \leq 12000$$

$$13(\dots) + 13(\dots) + 15(\dots) \leq 12000$$

- MASSIMO 2 $\pi^+ \pi^-$

$$y_{ij} = \begin{cases} 1 & \text{Se compriamo} \\ & \text{conf / bar /} \\ & \quad i / j \\ 0 & \text{altrimenti} \end{cases}$$

$$\sum_i \sum_j y_{ij} \leq 2$$

AGGREGAZIONE

$$\begin{aligned} & x_{ij} / y_{ij} \\ & \downarrow \\ & \underline{x_{ij} \leq \pi y_{ij}} \end{aligned}$$

- SCOMPOSSA S/. IFF

≥ 10 CONF.

variable? \iff

F.Q. $\geq 10 \rightarrow$ SCOMPOSSA

$\downarrow \quad \left\{ \begin{array}{l} 1 \text{ de} \geq 10 \text{ conf.} \end{array} \right.$

$W = \{ \dots \}$, otherwise

$F \cdot P \dots \rightarrow [0..05 .. W]$
* (GNE) Δ

Down!! \rightarrow OCC(H) SCOMS
S/I

BF COSMO < 0

N. MAX IT.

[* \rightarrow NINIR (LO S ALVO)]

Bd B $\rightarrow 2^\circ$ APP. 2023]

① $VB \leq \rho / F [SA, VB]$

118
? $\leftarrow N=127$ INCURSION
100 106
 $107 = 5'$

$(VB \leq SA)$

CALUSURA

② OMNU? $[SA, \underline{VB}]$

$VB = MA \times \geq \forall$ nodi
operati
operati $\rightarrow [P_3; P_{11}; P_5; P_6]$

$\lfloor LB \rfloor \geq$ nodi operati

$LB \geq$ tutti i nodi

108!

$\rightarrow [108; 117]$

$MA \times [S_A; VB]$
 $\geq nm \geq$ mes. AFBAT
vincolo

$MA \times [LB; S_A]$
 $\leq nm$ mes. AFBAT
 $\leq nm$

3) NDIAPSR
 P_3, P_4, P_3, P_6

CHIVDSE AS NDI?

[LB: SA]

(HIVD INDI $VB \leq 5. A$
 (PERC HIGHER THAN BOUND))

SA $\rightarrow 108$

$P_3 \rightarrow 100 \leq 108 \leq 1$] CLIVSI

$P_4 \rightarrow 106 \leq 108 \leq 1$]

$P_5 \rightarrow 113 \leq 108 \leq 1$] APORN

$P_6 \rightarrow 117 \leq 108 \leq 1$]

BEST BOUND FIRST

MIGLIOR VB TRA 'NOI'
 APORN

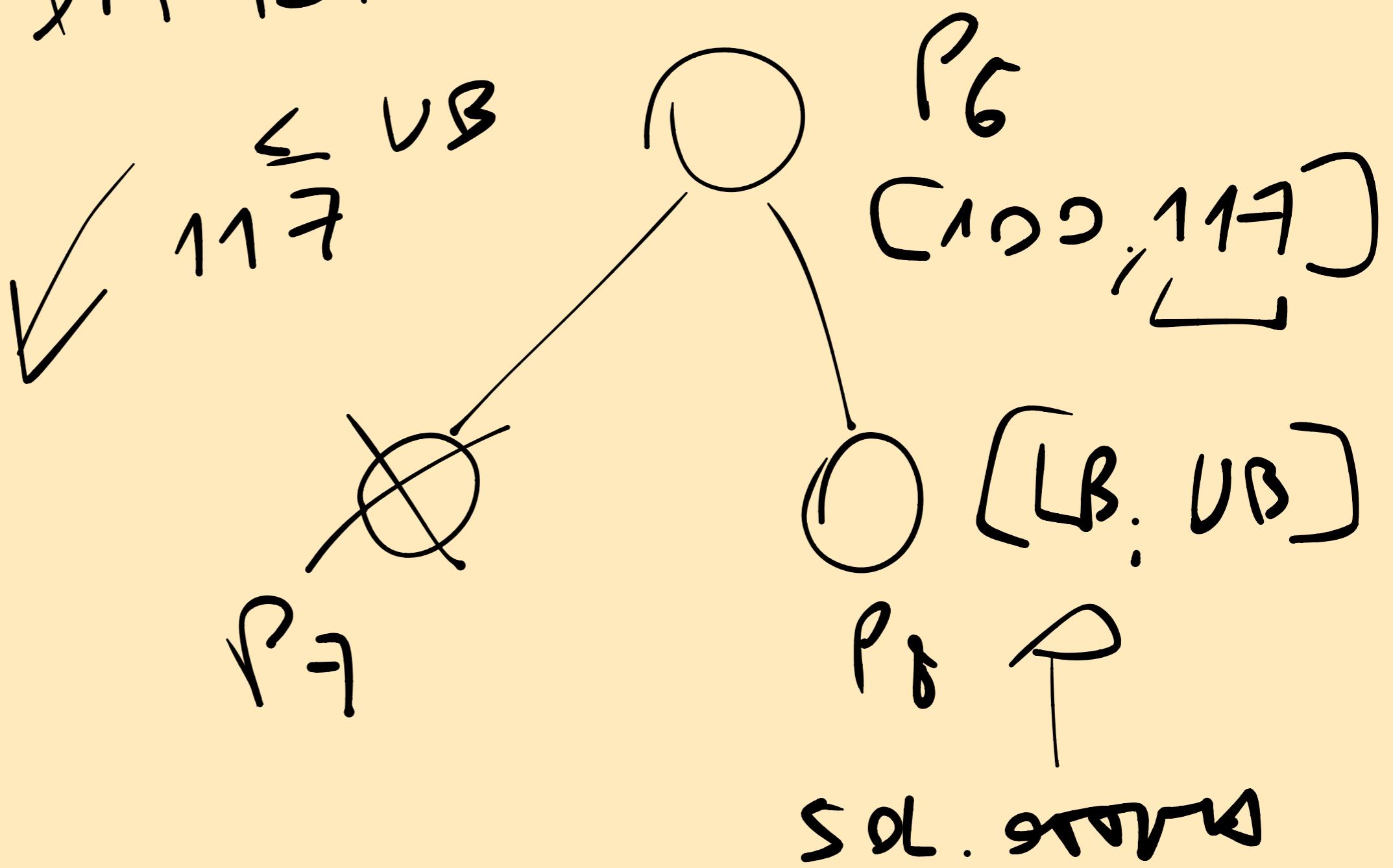
P MASSE

$P_5/P_6 \rightarrow 113/117$

4)

(S) SVILUPPO AL PUMO
PREC.

\Rightarrow DA BBF



[SA; VB]
P
R
MAX
MIN
PES, NODI, ARREDO
VB \leq P.F

$$VB \leq 117$$

$$LB \geq 108, \quad \text{NODI}$$

$$LB \geq 108$$

$$\rightarrow [108, 117]$$

$$ESEMPLO \leftrightarrow [110, 110]$$

IM. AMMO

$$\text{MAX} \leftrightarrow [S.A / U.B]$$

$$\text{MIN} \leftrightarrow [U.B ; S.A]$$

AMISSIBILI \rightarrow non
in

$[B / U.B] \rightarrow$ non
(QUANDO NON APERTI
AMMISSIBILI)

22/01/2012

$$\text{SOTTA} \rightarrow \{1/2\}$$

$$\text{DPI} \rightarrow \{A / B / C\}$$

$$\text{Baroni} \rightarrow \{1, 2, 3\}$$

MAX. PROPRIMO?

R' GIVES WEIGHTS

COSMO BOTTOM

SORRA $\rightarrow \{1/2\}$

NEI $\rightarrow \{A/B/C\}$

BOTTOM $\rightarrow \{1, 2, 3\}$

max $A/B/C \rightarrow x_i$

300/350/320

R' GIVES $1, 2, 3 \leftarrow y_j$

43/35/32

GOTO BOTTOM

met $\underline{300x_A + 350x_B + 320x_C}$
 $\underline{-115y_1 - 35y_2 - 32y_3}$

P

RIGAVERE - COSMO BOTTOM!

→ NO GLACCHI / PARMALUM
SFUSI

[IF QUANTITA ≥ 1]
 $\Rightarrow \text{VAR} = 0$
[OR]

[IF QUANTITA ≥ 0]
 $\Rightarrow \text{VAR} = 1$

$Z_i \Rightarrow 1$ se acquisto i
0 altrimenti

BIG-M \rightarrow AMMVAZIONE
A.R. DECISIONE

$$\left(\sum_i^3 x_i \leq M \cdot \sum_{i=1}^3 z_i \right)$$

$$x_i = \# \text{GIACCAB}$$

- \approx GIACCHI / PAM.

SFUSI \rightarrow + DI \emptyset

$$[z_A + z_B + z_C \geq 1]$$

- [POSSO USARE MAX 2]
RERNIATORI

$$\left\{ \begin{array}{l} x_i = \# \text{abit di tipo I} \\ y_j = \# \left[\begin{array}{c} \text{BOMBOLO} \\ \text{DI TIPO J} \end{array} \right] \end{array} \right.$$

$$z_i = 1/0 \text{ m i}$$

$\frac{1}{0}$

BINARIA

$W_j = \begin{cases} 1 & \text{se } w_j \text{ formatore } j \\ 0 & \text{altrimenti} \end{cases}$

$$W_1 + W_2 + W_3 \leq 2$$

$$\left[\sum_i y_i \leq M_{W_i} \right] \rightarrow$$

PROVATORI

DI VAR.
BIMARIA

$$(x_i | y_j / z_i | w_j)$$

$$\underbrace{i \in \text{PABIN}}_{\text{PABIN}} \quad \underbrace{j \in \text{ROWIN}}_{\text{ROWIN}}$$

$$\frac{3}{2}x_1 + \frac{1}{2}x_2 + \frac{2}{3}x_3 \leq 230 + 200$$

$$\frac{3}{2}x_2 + \frac{2}{3}x_3 \leq 250$$

P SCAGLI

↑
seria

$$3x_1 + 3x_2 + 3x_3 \leq 200$$

$$X_i = \# \text{ABIN}$$

- SGMR D' 200 EUR

$\geq S$, SE

$$S = \begin{cases} 1 & \text{RE} \geq 50 \text{ metab} \\ 0 & \text{otherwise} \end{cases}$$

$$X_1 = 50$$

$$(X_1 - S) \geq 1$$

→ PVR'D → QUANDO $X_1 = 0$

$$e^{-Y_1} = 1$$

AUORS

H A V A L O R E !

F. Q. . . . $\rightarrow -200(s)$

$x_i \in \mathbb{Z}_+$

$y_j \in \mathbb{Z}_+$

$w_j, r_j, s \in \{0, 1\}$

5/6 → SImplesso

○ $B \otimes B \rightarrow [LB; SA]$

○ $LB \geq$ med figlio

LB

$[LB; SA]$ minimo

P P

S.A = 18.5

A P G R A N T U M LB = 13.2

(b) $LB \leq S.A \rightarrow 19.5$

P_3 / P_5

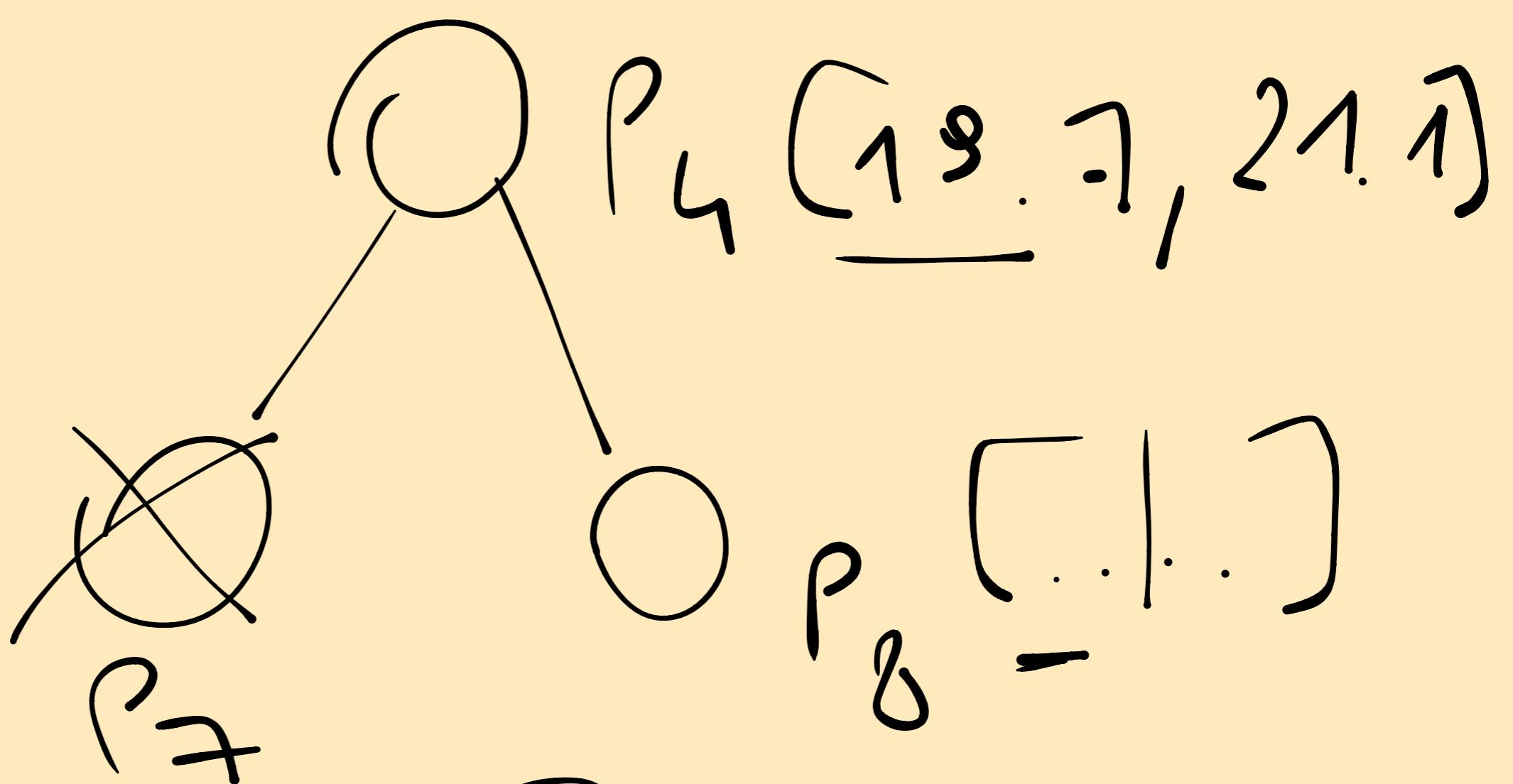
(c) $F.O \rightarrow [19.2 / 19.5]$

(d) B.B.F \rightarrow minima
 $[\{B, SA\}]$

\downarrow
19.7

$[\{B, SA\}]$

$B = \geq 19.7$
 $VB = 19.7$



$[19.7, 19.7]$

