

$I = \{E, N, L\}$ insieme delle tipologie di auto

x_i : numero di auto prodotte, di tipo $i \in I$

$$\sigma = \begin{cases} 1 & \text{se } x_E + x_L \geq 30 \\ 0 & \text{altrimenti} \end{cases}$$

$$x_E + x_L \geq 30 \rightarrow \sigma = 1 \rightarrow x_N \geq 10$$

Si divide in:

A) $x_E + x_L \geq 30 \rightarrow \sigma = 1$

e B)

$$\sigma = 1 \rightarrow x_N \geq 10$$

A) $x_E + x_L \geq 30 \rightarrow \sigma = 1$

$$\sigma = 0 \rightarrow x_E + x_L < 30$$

$$\sigma = 0 \rightarrow x_E + x_L \leq 29$$

$$\sigma = 0 \rightarrow x_E + x_L - 29 \leq 0$$

$$x_E + x_L - 29 \leq \alpha \sigma$$

$$x_E + x_L \leq 29 + M \sigma$$

B) $\sigma = 1 \rightarrow x_N \geq 10$

$$1 - \sigma = 0 \rightarrow x_N - 10 \geq 0$$

$$x_N - 10 \geq \alpha (1 - \sigma)$$

$$\alpha = -10$$

$$x_N - 10 \geq -10(1 - \sigma)$$

$$x_N \geq 10 \sigma$$

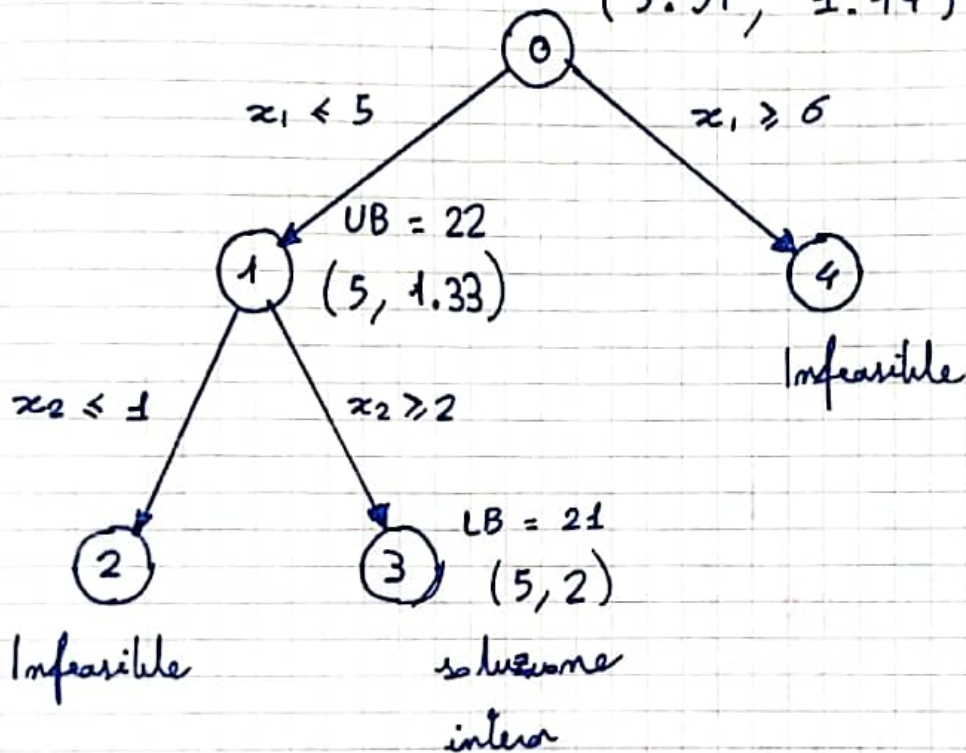
$$\max Z = 5x_1 - 2x_2$$

$$\text{s.t. : } \begin{aligned} -x_1 + 2x_2 &\leq 5 \\ 3x_1 + 2x_2 &\leq 19 \\ x_1 + 3x_2 &\geq 9 \\ x_1, x_2 &\in \mathbb{Z}^+ \end{aligned}$$

depth first con navigazione a sinistra

$$UB = 25$$

$$(5.57, 1.14)$$



$$x^* = (5, 2)$$

$$z^* = 21$$