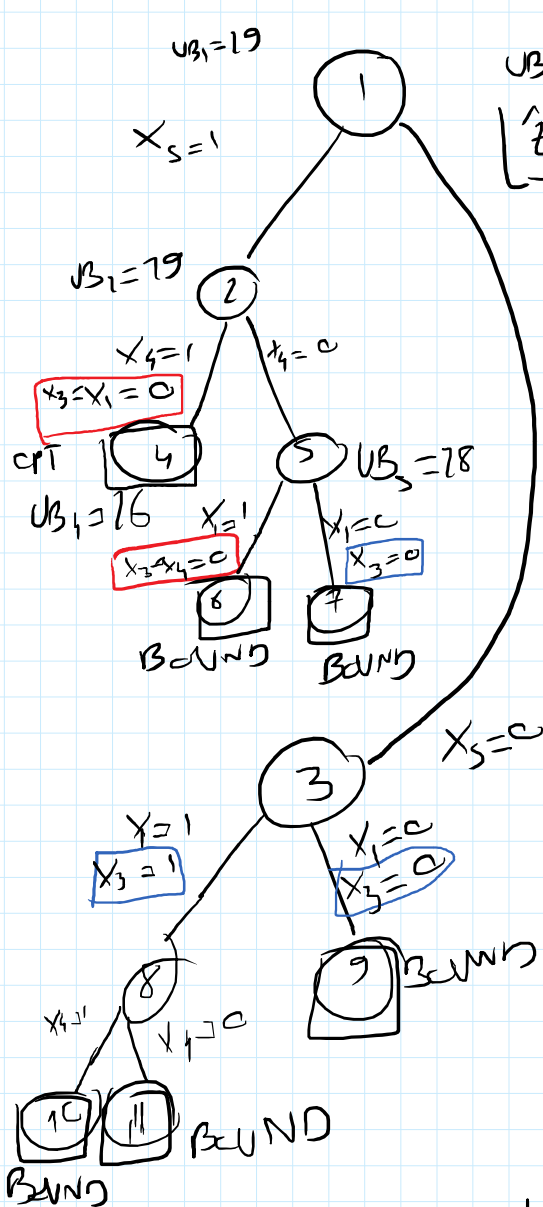


(a) $v_1, \dots, v_5 = 7, 5, 9, 10, 11,$
 $p_1, \dots, p_5 = 4, 1, 3, 5, 6,$
 $1, 5, 5, 3, 2, 1, 8, 3$

2	3	4	5	1	i
5	9	10	11	7	n
1	3	5	6	4	w

$b = 12.$

BRANCH AND BOUND:



$$UB_1 = 5 + 9 + 10 + \left\lfloor \frac{3}{6} \cdot 11 \right\rfloor = 19$$

$$\hat{z} = 19$$

$$UB_2 = 19 + 5 + 9 + \left\lfloor \frac{2}{5} \cdot 10 \right\rfloor = 19$$

$$\hat{z} = 11 + 5 + 9 = 25$$

$$UB_4 = 10 + 11 + 5 = 26 = \hat{z}$$

$$UB_5 = 11 + 5 + 9 + \left\lfloor \frac{2}{4} \cdot 7 \right\rfloor = 28$$

$$\hat{z} = 11 + 5 + 9 = 25$$

$$UB_6 = 18$$

$$UB_7 = 11 + 5 = 16$$

$$UB_8 = 5 + 9 + 10 + \left\lfloor \frac{3}{4} \cdot 7 \right\rfloor = 27$$

$$\hat{z} = 25$$

$$UB_{10} = 9 + 4 + 5 + \left\lfloor \frac{4}{3} \cdot 1 \right\rfloor = 19$$

$$\hat{z} = 21$$

$$UB_{11} = 9 + 1 + 5 = 15$$

$$UB_{10} = 26 = \hat{z}$$

$$UB_{11} = 9 + 1 + 5 = 15$$

$$x^* = (0, 1, 0, 1, 1)$$

1 2 3 4 5

\rightarrow

x_i

1	2	3	4	5
10	8	15	7	9
4	3	7	2	5

