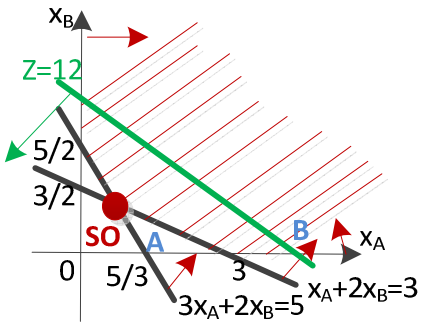
1. a) Optimal value of the decision variables: $x_A = 1; x_B = 1; x_P = 3$. Daily, the food for the animals should include one tone of each forage (A e B) and the pasture time should be 3 hours.

1. b) Dual decision variables: $y_1 = 1{,}5$ – each extra unit of nutrient 1 required will increase the minimum daily cost of feeding the animals by that amount, while the optimal basis is kept. $y_2 = 0{,}5$ - each extra unit of nutrient 2 required will increase the minimum daily cost of feeding the animals by that amount, while the optimal basis is kept. $y_3 = -1$ – each hour of pasture that will be available will decrease by one m.u. the minimum daily cost of feeding the animals, while the optimal basis is kept.

2. a)



OS: $\begin{cases} x_A + 2x_B = 3 \\ 3x_A + 2x_B = 5 \end{cases} \Leftrightarrow \cdots \Leftrightarrow \begin{cases} x_A = 1 \\ x_B = 1 \end{cases} \Rightarrow Z^* = 7$

2. b) **i.)** BNF: $A = \left(\frac{5}{3}, 0, -\frac{4}{3}, 0\right)$; **ii.)** NBF: $B = (4, 0, 1{,}7)$

2. c) Dual:

$$Max\ W = 3\ y_1 + 5\ y_2$$

$$\text{s.t.:} \begin{cases} y_1 + 3y_2 \leq 3 \\ 2\ y_1 + 2y_2 \leq 4 \\ y_1, y_2 \geq 0 \end{cases}$$

2. d) EC: $\text{Min}\{-3;\ -5\} = -5 \rightarrow y_2$; LC: $\text{Min}\left\{\frac{3}{3}; \frac{4}{2}\right\} = 1 \rightarrow y_3$

	W	y_1	y_2	y_3	y_4	TI
W	1	-3	-5	0	0	0
y_3	0	1	3	1	0	3
y_4	0	2	2	0	1	4
W	1	-4/3	0	5/3	0	5
y_2	0	1/3	1	1/3	0	1
y_4	0	4/3	0	-2/3	1	2