

ekonomický model

úkol 6.1/1

	S_1	S_2	požadované mno. [g]
mil. A [g/kg]	1	1	160
mil. C [g/kg]	2	5	500
cena [Kč/kg]	30	50	min

$$x_1 \dots \text{množství } S_1 \text{ [kg]}$$

$$x_2 \dots \text{---} S_2 \text{ ---}$$

$$x_1 + x_2 \geq 160$$

$$2x_1 + 5x_2 \geq 500$$

$$z = 30x_1 + 50x_2 \rightarrow \min$$

$$x_{1,2} \geq 0$$

matem.
model

SLN $\rightarrow$ SLP

$$x_1 + x_2 - x_1' + x_1'' = 160$$

$$2x_1 + 5x_2 - x_2' + x_2'' = 500$$

$$z - 30x_1 - 50x_2 = 0 \text{ (min)}$$

$$z' + 3x_1 + 5x_2 - x_1' - x_2' = 660 \text{ (min)}$$

$$x_{1,2} \geq 0, x_{1,2}' \geq 0, x_{1,2}'' \geq 0$$

$$z' = x_1'' + x_2'' \rightarrow \min$$

KT $\checkmark$ $x_{1,2} \geq 0 \checkmark \Rightarrow$ ST

z.p.	x_1	x_2	x_1'	x_2'	x_1''	x_2''	θ_i	$\rho = \frac{\theta_i}{a_{ie}}$, $a_{ie} > 0$
x_1''	1	1	-1	0	1	0	160	160 $\tilde{R}1 - \tilde{R}1'$
x_2''	2	5	0	-1	0	1	500	100 $\tilde{R}2:5$
z	-30	-50	0	0	0	0	0	$\min_2 \tilde{R}3 + 10\tilde{R}2$
z'	3	6	-1	-1	0	0	660	$\min_1 \tilde{R}4 - 6\tilde{R}2'$
x_1''	3/5	0	-1	1/5	1	-1/5	60	100 $\tilde{R}1 \cdot 5/3$
x_2	2/5	1	0	-1/5	0	1/5	100	250 $\tilde{R}2 - 2/5\tilde{R}1'$
z	-10	0	0	-10	0	10	5000	$\min_2 \tilde{R}3 + 10\tilde{R}1'$
z'	3/5	0	-1	1/5	0	-6/5	60	$\min_1 \tilde{R}4 - \tilde{R}1$
x_1	1	0	-5/3	1/3	5/3	-1/3	100	
x_2	0	1	2/3	-1/3	-2/3	1/3	60	
z	0	0	-50/3	-20/3	50/3	20/3	6000	$\min_2$
z'	0	0	0	0	1	-1	0	$\min_1$

$$\vec{x}_{\text{opt}} = (100, 60; 0, 0)$$

$$z_{\text{min}} = 6000 \text{ Kč}$$

úkol 6.1/4

80 cm	ŘP				požadované m. [kg]
	1.	2.	3.	4.	
50 cm	1	0	0	0	50
40 cm	0	2	1	0	80
25 cm	1	0	1	3	95
objed[cm]	5	0	15	5	min

SLN $\rightarrow$ SLR

$$x_1 - x_1' + x_1'' = 50$$

$$2x_2 + x_3 - x_2' + x_2'' = 80$$

$$x_1 + x_3 + 3x_4 - x_3' + x_3'' = 95$$

$$z = 5x_1 + 15x_3 + 5x_4 = 0 \quad (\text{min})$$

$$z' = 2x_1 + 2x_2 + 2x_3 + 3x_4 - x_1' - x_2' - x_3' = 225 \quad (\text{min})$$

x_i ... počet oddl. typů minuzanků podle ŘP i

$$x_1 \geq 50$$

$$2x_2 + x_3 \geq 80$$

$$x_{1,2,3,4} \geq 0$$

$$x_1 + x_3 + 3x_4 \geq 95$$

$$z = 5x_1 + 15x_3 + 5x_4 \rightarrow \text{min}$$

$$x_{1,2,3,4} \geq 0 \quad x_{1,2,3}' \geq 0 \quad x_{1,2,3}'' \geq 0$$

$$z' = x_1'' + x_2'' + x_3'' \rightarrow \text{min}$$

$$KT \checkmark \quad x_2 \geq 0 \checkmark \Rightarrow ST$$

Důl: dopovědi + interpretace