Домашняя работа N5 за 24.03

N1

ДСМ:

$$6x_1 + 8x_2 + 5x_3 \to min$$

$$x_1 - 4x_2 + 3x_3 \le -2 \quad + x_4$$

$$-3x_1 + 2x_2 - 4x_3 \le -8 \quad + x_5$$

$$-2x_1 - x_2 + 3x_3 \le 5 \quad + x_6$$

	x_1	x_2	x_3	x_4	x_5	x_6	b		
x_4	1	-4	2	1	0	0	-2	-2 II	$\frac{6}{3} > \frac{5}{4}$
x_5°	-3	2	(-4)	0	1	0	-8	$:-4$	
x_6	-2	-1	3	0	0	1	5	-3 II	
Δ	6	8	5	0	0	0			

	x_1^6	x_2^8	x_3^5	x_4°	x_5°	x_6°	b		
x_4°	$-\frac{1}{2}$	(-3)	0	1	$\frac{1}{2}$	0	-6	$:-3$	
x_3^5	$\frac{3}{4}$	$-\frac{1}{2}$	1	0	$-\frac{1}{4}$	0	2	$+\frac{1}{2}$ I	$\frac{9}{2} > \frac{10,5}{3}$
x_6°	$-\frac{17}{4}$	$\frac{1}{2}$	0	0	$\frac{3}{4}$	1	-1	$-\frac{1}{2}$ I	
Δ	$\frac{9}{4}$	10,5	0	0	$\frac{5}{4}$	0			

$$\Delta_1' = 6 - \frac{15}{4} = \frac{9}{4}$$

$$\Delta_2' = 8 + \frac{5}{2} = \frac{21}{2}$$

$$\Delta_5' = 0 + \frac{5}{4} = \frac{5}{4}$$

	x_1^0	x_2^8	x_3^5	x_4^0	x_5^0	x_6^0	b	
x_2^8	$\frac{1}{6}$	1	0	$-\frac{1}{3}$	$-\frac{1}{6}$	0	2	$-\frac{1}{6}$ III
x_3^5	$\frac{5}{6}$	0	1	$-\frac{1}{6}$	$-\frac{1}{3}$	0	3	$-\frac{5}{6}$ III
x_6^0	$-\frac{13}{3}$	0	0	$\frac{1}{6}$	$\frac{5}{6}$	1	-2	: $-\frac{13}{3}$
Δ	$\frac{1}{2}$	0	0	$\frac{7}{2}$	3	0		

	x_1	x_2	x_3	b
x_2	0	1	0	$\frac{25}{13}$
x_3	0	0	1	$\frac{34}{13}$
x_1	1	0	0	$\frac{6}{13}$

Відповідь: $(\frac{6}{13}; \frac{25}{13}, \frac{34}{13}; 0, 0; 0)$

$Z = \frac{406}{13}$

N2

МСМ:

$6x_1 - 8x_2 - 5x_3 \to min$

$x_1 + x_2 + x_3 \leqslant 16$

$3x_2 + 2x_3 \leqslant 5$

$B(01) = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$; $U^0 = (0;0)$

$A_4 \; A_5$

$\Delta_1^0 = 6$; $\Delta_2^0 = -8$; $\Delta_3^0 = -5$

B	A_1	A_2	A_3	A_4	A_5
16	1	1	1	1	0
5	0	3	2	0	1
Δ^0	6	-8	-5	0	0
Δ^1	6	0	$\frac{1}{3}$	0	$\frac{8}{3}$
Δ^2					

$\beta_{(0)} = \begin{pmatrix}1&0\\0&1\end{pmatrix}\begin{pmatrix}16\\5\end{pmatrix} = \begin{pmatrix}16\\5\end{pmatrix}$

$\alpha^0 = \begin{pmatrix}1&0\\0&1\end{pmatrix}\begin{pmatrix}1\\3\end{pmatrix} = \begin{pmatrix}1\\3\end{pmatrix}$

$B_{(1)} = \begin{pmatrix}1&1\\0&3\end{pmatrix}$ (A_4 A_2); $B_{(1)}^{-1} =$

$= \begin{pmatrix}1&-\frac{1}{3}\\0&\frac{1}{3}\end{pmatrix}$

$u^1 = (0\ -8)\begin{pmatrix}1&-\frac{1}{3}\\0&\frac{1}{3}\end{pmatrix} = (0\ -\frac{8}{3})$

$\Delta_1^1 = 6 - (0\ -\frac{8}{3})\begin{pmatrix}1\\0\end{pmatrix} = 6$

$\Delta_2^1 = 0$; $\Delta_4^1 = 0$

$\Delta_3^1 = -5 - (0\ -\frac{8}{3})\begin{pmatrix}1\\2\end{pmatrix} = \frac{1}{3}$

$\Delta_5^1 = 0 - (0\ -\frac{8}{3})\begin{pmatrix}0\\1\end{pmatrix} = \frac{8}{3}$

$\beta^1 = B_{(1)}^{-1} \cdot B = \begin{pmatrix}1&-\frac{1}{3}\\0&\frac{1}{3}\end{pmatrix}\begin{pmatrix}16\\5\end{pmatrix} = \begin{pmatrix}43/3\\5/3\end{pmatrix}$ A_4 A_2

Відповідь: $Z = -8 \cdot \frac{5}{3} = -\frac{40}{3}$