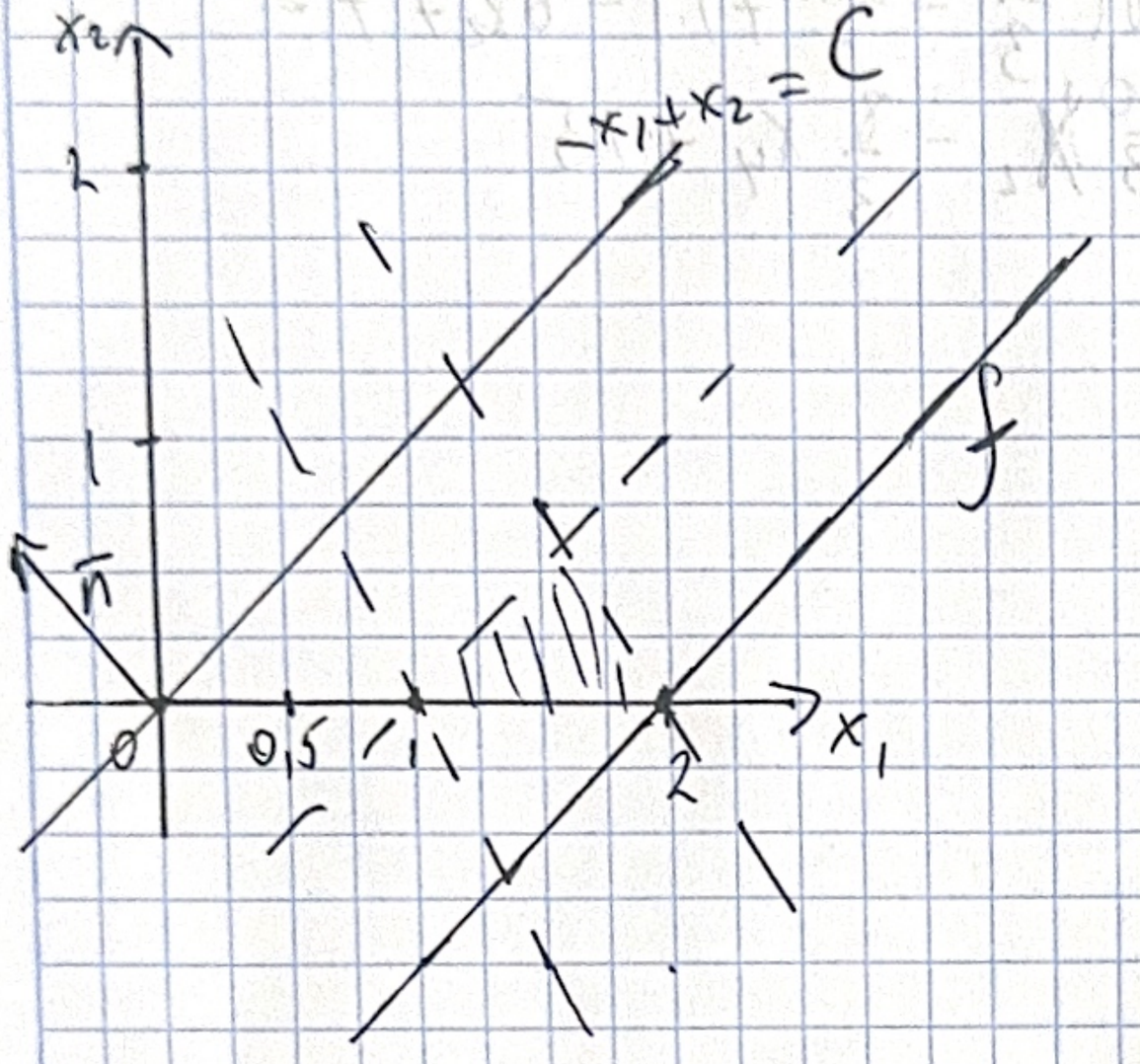
Вар - 17

I.

$$\begin{cases} -x_1 + x_2 \to \min \\ 1 \le x_1 + x_2 \le 2 \\ 1 \le x_1 - 2x_2 \le 2 \\ x_1, x_2 \ge 0 \end{cases}$$



$grad(f) = (-1, 1)$ ($\bar{n}$ по усар.)

$f(x^*) = f(2, 0) = -2$

II. $F(X) = CX \to \max$

$AX = B$

$X \ge 0$

$C = (6, -1, 2, -1, 1)$

$b = (2, 11, 6)$

$$A = \begin{vmatrix} -1 & 1 & 1 & 0 & 0 \\ 5 & 2 & 1 & 1 & 1 \\ 3 & 2 & 0 & 0 & 1 \end{vmatrix}$$

$$\left(\begin{array}{ccccc|c} -1 & 1 & 1 & 0 & 0 & 2 \\ 5 & 2 & 1 & 1 & 1 & 11 \\ 3 & 2 & 0 & 0 & 1 & 6 \end{array}\right) \quad (2) - (3) \longrightarrow \left(\begin{array}{ccccc|c} -1 & 1 & 1 & 0 & 0 & 2 \\ 2 & 0 & 1 & 1 & 0 & 5 \\ 3 & 2 & 0 & 0 & 1 & 6 \end{array}\right)$$

(2) - (1)

$$\left(\begin{array}{ccccc|c} -1 & 1 & 1 & 0 & 0 & 2 \\ 3 & -1 & 0 & 1 & 0 & 3 \\ 3 & 2 & 0 & 0 & 1 & 6 \end{array}\right)$$

$x_3 = x_1 - x_2 + 2$

$x_4 = -3x_1 + x_2 + 3$

$x_5 = -3x_1 - 2x_2 + 6$

$F = 8x_1 - 6x_2 + 7$

	x_1	x_2	β
x_3	1	-1	2
x_4	-3	1	3
x_5	-3	-2	6
F	8	-6	7

$$x_1 = \frac{x_2}{3} - \frac{x_4}{3} + 1$$

$$x_3 = \frac{x_2}{3} - \frac{x_4}{3} + 1 - x_2 + 2 = -\frac{2}{3}x_2 - \frac{x_4}{3} + 3$$

$$x_5 = -3\left(\frac{x_2}{3} - \frac{x_4}{3} + 1\right) - 2x_2 + 6 =$$

$$= -3x_2 + x_4 + 3$$

$$F = 8\left(\frac{x_2}{3} - \frac{x_4}{3} + 1\right) - 6x_2 + 7 =$$

$$= -\frac{10}{3}x_2 - \frac{8}{3}x_4 + 15$$

	x_2	x_4	β
x_1	$\frac{1}{3}$	$-\frac{1}{3}$	1
x_3	$-\frac{2}{3}$	$-\frac{1}{3}$	3
x_5	-3	1	3
F	$-\frac{10}{3}$	$-\frac{8}{3}$	15

$F^* = 15$

$x^* = (1, 0, 3, 0, 3)$