№3.1

Фирма 1 - выпускае T_1 по 900 единиц,

Фирма 2 - T_2 по 700,

Ф. 3 - T_3 по 1000.

T_1; T_2 - комплект по 1 \$, 1000 комплектов.

$v(\{1\}) = 0, \quad v(\{2\}) = 0, \quad v(\{3\}) = 0$

$v(\{1,3\}) = 900, \quad v(\{2,3\}) = 700$

$v(\{1,2,3\}) = 1000.$

$x_1 + x_2 + x_3 = 1000$

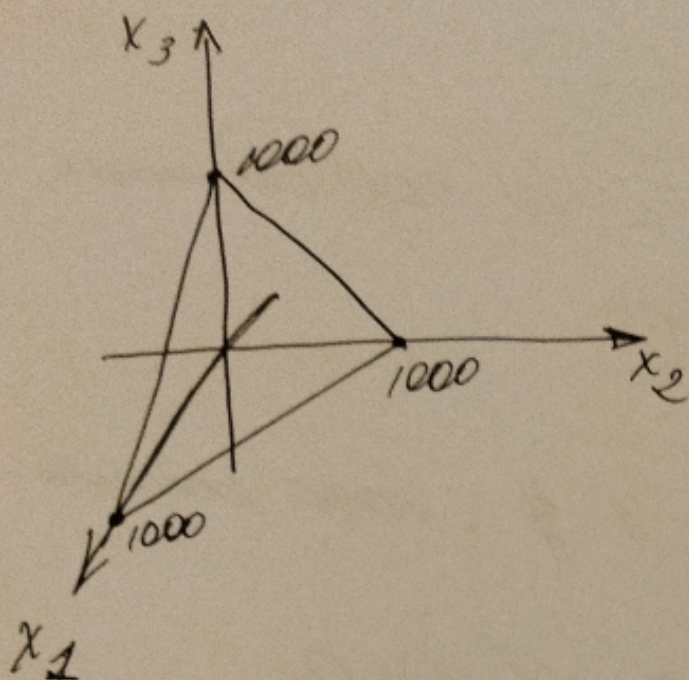$x_1 + x_3 \geq 900$

$x_2 + x_3 \geq 700$

$x_i \geq 0$

$x_1 + x_2 \geq 0$

$(300, 700, 900)$

$(700, 100, 200)$

$(700, 700, 1000)$

$C = \{ x = \lambda_1 (300, 700, 900) +$
$\quad + \lambda_2 (700, 100, 200) +$
$\quad + \lambda_3 (700, 700, 1000) \} \mid \lambda_1 + \lambda_2 + \lambda_3 = 1,$
$\quad \lambda_i \geq 0, i = \overline{1,3} \}$

Задание 3.2

$v(\{1\}) = 0$ $x_1 + x_2 = 1$

$v(\{2\}) = 0$ $x_i \geqslant 0, \; i = \overline{1,2}$

$v(\{1,2\}) = 1$

$C = \{ x = \lambda_1 (1,0) + \lambda_2 (0,1) \mid \lambda_1 + \lambda_2 = 1, \lambda_{1,2} \geqslant 0 \}.$

Задание 5.1

N - ядро -? (типа $(0,1)$).

$v(\{1,2\}) = 0.5$, $v(\{1,3\}) = 0.6$, $v(\{2,3\}) = 0.7$.

$w \to max$.

$e(x, \{1,2\}) = x_1 + x_2 - 0.6 \geq w$

$e(x, \{2,3\}) = x_2 + x_3 - 0.7 \geq w$

$e(x, \{1,3\}) = x_1 + x_3 - 0.5 \geq w$

$e(x, \{1,2\}) = x_1 + x_2 = \dfrac{17}{30}$

$e(x, \{2,3\}) = x_2 + x_3 = \dfrac{20}{30}$

$e(x, \{1,3\}) = x_1 + x_3 = \dfrac{14}{30}$

$(x^{(1)}, w^{(1)}) = (x^{(t)}, w^{(t)}, \lambda^{(t)}, \mu^{(t)})$, $w = \dfrac{1}{30}$

$w + \sum\limits_{k} \lambda_k \left(\sum x_i - v(k) - w \right) + \mu \left(\sum x_i - v(N) \right)$

$(x^{(1)}, w^{(1)}) = \left(\dfrac{7}{30}, \dfrac{1}{3}, \dfrac{12}{30}, -\dfrac{1}{30} \right)$

$x^{(1)} = \left(\dfrac{7}{30}, \dfrac{1}{3}, \dfrac{12}{30} \right) - N$-ядро.

Задание 6.1

$$V(\{1\}) = 2, \quad V(\{2\}) = 3, \quad V(\{3\}) = 3$$

$$V(\{1,2\}) = 6, \quad V(\{1,3\}) = 6, \quad V(\{2,3\}) = 7$$

$$V(\{1,2,3\}) = 10$$

$$n = 3.$$

$$y_1 = \frac{1}{3} \cdot 10 + \frac{1}{6}(6 + 6 - 2 \cdot 7) + \frac{1}{6}(2 \cdot 2 - 3 - 3) = \frac{8}{3}$$

$$y_2 = \frac{1}{3} \cdot 10 + \frac{1}{6}(6 + 7 - 2 \cdot 6) + \frac{1}{6}(6 - 2 - 3) = \frac{11}{3}$$

$$y_3 = \frac{1}{3} \cdot 10 + \frac{1}{6}(7 + 6 - 2 \cdot 6) + \frac{1}{6}(6 - 2 - 3) = \frac{11}{3}.$$

$$y^* = \left(\frac{8}{3}, \frac{11}{3}, \frac{11}{3}\right).$$