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1.

$$\begin{aligned}
 & X_k \quad (k = 1 \dots l), \\
 & Y_i \quad (i = 1 \dots m), \\
 & Z_j \quad (j = 1 \dots n), \\
 & Z_0, \\
 & X_k \quad (k = 1 \dots l) \longrightarrow Y_i \quad (i = 1 \dots m) \longrightarrow Z_j \quad (j = 0 \dots n), \\
 & \left\| v_{ij} \right\| \\
 & Y_i \quad (i = 1 \dots m) \quad Z_j \quad (j = 0 \dots n) \\
 & \left\| v_{ij} \right\|, \\
 & Z_i \quad (i = 0 \dots n), \\
 & Y_i \quad (i = 1 \dots m) \quad Z_j \quad (j = 0 \dots n), \\
 & D_{ij} = \sum_{k=0}^n c_{kj} v_{ik}, \\
 & Y_i \quad (i = 1 \dots m) \\
 & F_i = \min_{j=0 \dots n} \sum_{k=0}^n c_{kj} v_{ik}, \\
 & Y_i \quad (i = 1 \dots m) \\
 & Z_i \quad (i = 1 \dots n)
 \end{aligned}$$

$$\min_{j=1\dots n} \sum_{k=0}^n k_j v_{ik} \langle \sum_{k=0}^n c_{k0} v_{ik} ,$$

 Z_0

()

$$\min_{j=1\dots n} \sum_{k=0}^n k_j v_{ik} \rangle \sum_{k=0}^n c_{k0} v_{ik} .$$

, , ,
 ;
 :
 $c_1 - , ,$
 ;
 $c_2 - , ,$
 , , -
 ;
 $c_3 - , ,$
 ;
 $c_4 - , ,$ -
 ;
 $c_5 - , ,$
 .
 , - , -
 .

$$c_1 \leq c_2 \leq c_3 \leq c_4 \leq c_5. ,$$

 $Y_i (i = 1\dots m)$
 $Z_i (i = 1\dots n)$

$$\max_{j=1\dots n} v_{ij}^* + av_{i0}^* \rangle b ,$$

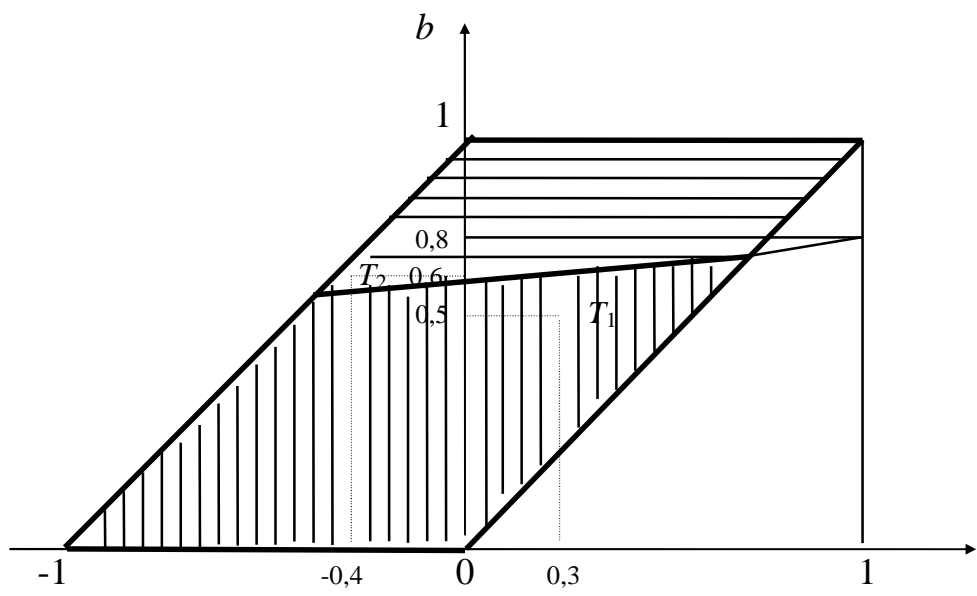
 $Z_0 ()$

$$\max_{j=1\dots n} v_{ij}^* + av_{i0}^* \langle b ,$$

$$v_{ij}^* = \frac{v_{ij}}{\sum_{j=0}^n v_{ij}}, \quad v_{i0}^* = \frac{v_{i0}}{\sum_{j=0}^n v_{ij}},$$

$$a = \frac{5^- 4^- 3^+ 2}{5^- 1}, \quad b = \frac{5^- 3}{5^- 1}.$$

$Y_i (i = 1...m)$ -
 $Z_j (j = 1...n),$ $\max_{j=1...n} v_{ij}^*$,
 $Z_0 ($
 $).$
 $-1 \leq \leq 1, 0 \leq b \leq 1, b - 1 \leq \leq b,$
 b
 $(1; 1), (0; 1), (-1; 0), (0; 0).$



$\max_{j=1...n} v_{ij}^* + a v_{i0}^* = b,$ b
 $\max_{j=1...n} v_{ij}^* - v_{i0}^* -$ b
 $),$
 $($ $), -$
 $($ $).$

$\max_{j=1...n} v_{ij}^* = 0,6; v_{i0}^* = 0,2.$
 $= 0,3; b = 0,5$

1
 $:$

$$0,6 + 0,3 \times 0,2 = 0,66 > 0,5.$$

2

$$= -0,4; b = 0,6$$

:

$$0,6 - 0,4 \times 0,2 = 0,52 < 0,6.$$

:

$$Y_i (i = 1 \dots m)$$

$$\max_{j=1 \dots n} v_{ij}^*$$

$$= \max_{j=1 \dots n} v_{ij}^* + c_4 v_{i0}^* + c_5 (1 - \max_{j=1 \dots n} v_{ij}^* - v_{i0}^*);$$

$$Y_i (i = 1 \dots m)$$

$$= \max_{j=1 \dots n} v_{ij}^* + c_3 (1 - v_{i0}^*).$$

$$(1; 1): c_1 = c_2 = c_3 = c_4 < c_5,$$

$$(0; 1): c_1 = c_2 = c_3 < c_4 = c_5,$$

$$(-1; 0): c_1 = c_2 < c_3 = c_4 = c_5,$$

$$(0; 0): c_1 < c_2 = c_3 = c_4 = c_5,$$

2.

$$2.1. \quad v_{ij}^* \quad Y_i (i = 1 \dots m).$$

$$2.2. \quad \max_{j=1 \dots n} v_{ij}^* + a v_{i0}^* = b$$

b.

$$2.3. \quad b \quad Y_i (i = 1 \dots m)$$

$$2.4. \quad (\quad).$$

$$2.5. \quad Y_i (i = 1 \dots m) (\quad).$$

$$2.6. \quad Y_i (i = 1 \dots m) (\quad).$$

3.

$$3.1.$$

3.2.

, , $Y_i (i = 1...m)$.

4.

4.1.

4.2.

4.3. v_{ij}^* .

4.4. $\max_{j=1...n} v_{ij}^* + a v_{i0}^* = b$

b , .

4.5.

().

4.6.

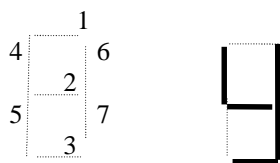
, ().

4.7.

$Y_i (i = 1...m)$ ().

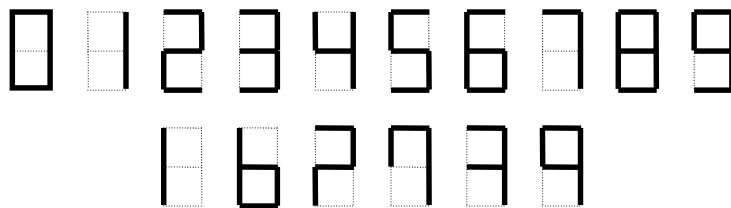
5.

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	7	6	5	4	3	2	1
	1	1	0	1	1	1	0

:



$Y_i (i = 1...m)$

$Z_j (j = 0...n)$,

v_{ij}^*

),

(

0):

	0	1	2	3	4	5	6	7	8	9	10	
-	52	0	0	4	16	4	2	0	4	18	0	100

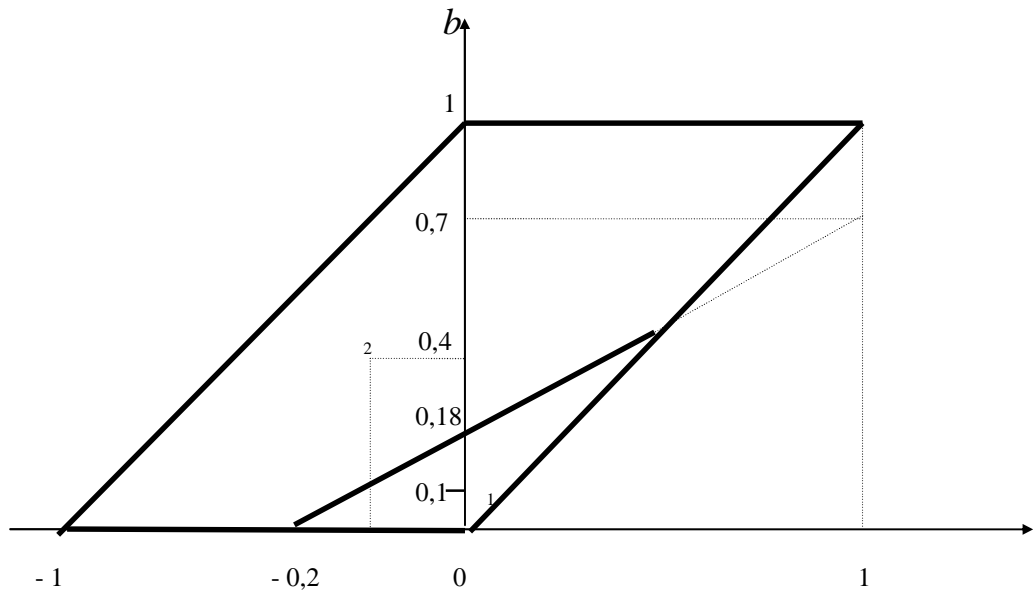
v_{ij}^*

:

	v_{i0}^*	v_{i1}^*	v_{i2}^*	v_{i3}^*	v_{i4}^*	v_{i5}^*	v_{i6}^*	v_{i7}^*	v_{i8}^*	v_{i9}^*	v_{i10}^*
	0,52	0	0	0,04	0,16	0,04	0,02	0	0,04	0,18	0

$\max_{j=1..n} v_{ij}^* = v_{i9}^* = 0,18; v_{i0}^* = 0,52.$
 $\max_{j=1..n} v_{ij}^* + av_{i0}^* = b \quad 0,18 + \times 0,52 = b.$

b



- 1 $= 0; b = 0,1$
- $Y_i (i = 1...m)$
- 2 $= - 0,2; b = 0,4$
- .
- .

$c_1 = 1, c_5 = 11, c_5 - c_1 = 10.$
 $= 0; b = 0,1.$
 $b = 0,1 \quad c_5 - c_3 = 1, \quad c_3 = 10.$
 $= 0 \quad c_4 - c_2 = 1.$

$$\begin{aligned}
 & c_4 = 10,5, \quad c_2 = 9,5, \\
 & : c_1 = 1, c_2 = 9,5, c_3 = 10, c_4 = 10,5, c_5 = 11. \\
 & \quad \quad \quad = -0,2; b = 0,4. \\
 & \quad \quad \quad b = 0,4 \quad c_5 - c_3 = 4, \quad c_3 = 7. \\
 & \quad \quad \quad \quad \quad \quad = -0,2 \quad c_4 - c_2 = 6. \\
 & \quad \quad \quad c_4 = 9, \quad c_2 = 3, \\
 & : c_1 = 1, c_2 = 3, c_3 = 7, c_4 = 9, c_5 = 11.
 \end{aligned}$$

$$\begin{aligned}
 & , \quad , \quad 1 \quad 2.
 \end{aligned}$$

$${}^{(1)} = 1 \times 0,18 + 10,5 \times 0,52 + 11 \times 0,30 = 8,94,$$

$${}^{(1)} = 9,5 \times 0,52 + 10 \times 0,48 = 9,74.$$

$${}^{(1)} \quad {}^{(1)},$$

9).

$${}^{(2)} = 1 \times 0,18 + 9 \times 0,52 + 11 \times 0,30 = 8,10,$$

$${}^{(2)} = 3 \times 0,52 + 7 \times 0,48 = 4,92.$$

$${}^{(2)} \quad {}^{(2)},$$

$$(\quad) .$$

$$\begin{aligned}
 & , \quad , \\
 & , \quad , \\
 & , \quad .
 \end{aligned}$$

$$0 \quad 1,$$

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