

Контрольная работа

Задание 1. Задача линейного программирования

Задача 1

Дана задача линейного программирования с двумя переменными.

Задание.

1. Решить графическим методом задачу ЛП с двумя переменными.
2. Решить ЗЛП функциями MatLab (или Excel).

| № | | № | |
|----------|---|-----------|---|
| 1 | $\begin{cases} f(X) = -3x_1 - 2x_2 \rightarrow \min \\ 10x_1 - 26x_2 \leq 5 \\ -6x_1 + 6x_2 \geq -27 \\ -2x_1 + 17x_2 \leq 51 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 16 | $\begin{cases} f(X) = -0,5x_1 + 11,5x_2 \rightarrow \max \\ -6x_1 - 3x_2 \geq -45 \\ x_1 + x_2 \leq 9 \\ -5x_1 + x_2 \leq 3 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 2 | $\begin{cases} f(X) = -1,2x_1 - 3,8x_2 \rightarrow \min \\ -4x_1 + 5x_2 \geq -4 \\ 6x_1 - x_2 \leq 19 \\ -5x_1 + 8x_2 \leq 20 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 17 | $\begin{cases} f(X) = 1,5x_1 + 3,5x_2 \rightarrow \max \\ 9x_1 + 8x_2 \leq 81 \\ 2x_1 - 6x_2 \geq -17 \\ -5x_1 + 4x_2 \leq 4 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 3 | $\begin{cases} f(X) = x_1 - 2,8x_2 \rightarrow \min \\ 10x_1 + 2x_2 \leq 45 \\ 2x_1 + 6x_2 \leq 37 \\ 7x_1 - 4x_2 \geq -8 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 18 | $\begin{cases} f(X) = 7x_1 + 2,5x_2 \rightarrow \max \\ 3x_1 + 2x_2 \leq 30 \\ 9x_1 + 8x_2 \leq 93 \\ 5x_1 - 10x_2 \geq -35 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 4 | $\begin{cases} f(X) = 4x_1 - 2x_2 \rightarrow \min \\ -6x_1 + x_2 \geq -51 \\ 15x_1 + 38x_2 \leq 249 \\ -15x_1 + 52x_2 \leq 156 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 19 | $\begin{cases} f(X) = 4,8x_1 + 5x_2 \rightarrow \max \\ 12x_1 + 9x_2 \leq 108 \\ 2x_1 + 2x_2 \leq 21 \\ 6x_1 - 10x_2 \geq -65 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 5 | $\begin{cases} f(X) = -4,5x_1 - 3x_2 \rightarrow \min \\ 25x_1 - 38x_2 \leq 80 \\ -2x_1 - 14x_2 \geq -49 \\ -18x_1 + 35x_2 \leq 42 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 20 | $\begin{cases} f(X) = 2,3x_1 + 3,7x_2 \rightarrow \max \\ -6x_1 - x_2 \geq -48 \\ 14x_1 + 14x_2 \leq 147 \\ -11x_1 + 8x_2 \leq 8 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |

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|-----------|--|-----------|---|
| 6 | $\begin{cases} f(X) = -6,5x_1 - 1,5x_2 \rightarrow \min \\ 60x_1 - 53x_2 \leq 72 \\ 6x_1 - 4x_2 \leq 15 \\ 30x_1 - 34x_2 \geq -51 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 21 | $\begin{cases} f(X) = 3,5x_1 + 5,4x_2 \rightarrow \max \\ 5x_1 - 12x_2 \leq 10 \\ -5x_1 - 8x_2 \geq -60 \\ 3x_1 + 10x_2 \leq 62 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 7 | $\begin{cases} f(X) = -3,5x_1 - 0,5x_2 \rightarrow \min \\ -11x_1 + 8x_2 \geq -22 \\ 2x_1 + 6x_2 \leq 45 \\ -8x_1 + 9x_2 \leq 18 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 22 | $\begin{cases} f(X) = 0,8x_1 + 9,6x_2 \rightarrow \max \\ 6x_1 - 5x_2 \leq 30 \\ 4x_1 + 5x_2 \leq 45 \\ x_1 - 10x_2 \geq -45 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 8 | $\begin{cases} f(X) = 5x_1 - 8,5x_2 \rightarrow \min \\ 10x_1 - 7x_2 \leq 22 \\ -6x_1 + x_2 \geq -26 \\ -36x_1 + 55x_2 \leq 187 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 23 | $\begin{cases} f(X) = 4,3x_1 + 12,5x_2 \rightarrow \max \\ -20x_1 + 21x_2 \geq -68 \\ 6x_1 + 14x_2 \leq 61 \\ -x_1 + 4x_2 \leq 12 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 9 | $\begin{cases} f(X) = 3,2x_1 - 4,6x_2 \rightarrow \min \\ 15x_1 - 26x_2 \leq 12 \\ 4x_1 + 3x_2 \leq 33 \\ -4x_1 - 9x_2 \geq -63 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 24 | $\begin{cases} f(X) = 7,8x_1 + 5,2x_2 \rightarrow \max \\ -25x_1 + 48x_2 \geq -30 \\ 5x_1 + 4x_2 \leq 40 \\ 7x_1 + 20x_2 \leq 128 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 10 | $\begin{cases} f(X) = 0,5x_1 - 7,5x_2 \rightarrow \min \\ -10x_1 + 13x_2 \geq -10 \\ 10x_1 + 3x_2 \leq 42 \\ -x_1 + 3x_2 \leq 9 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 25 | $\begin{cases} f(X) = 10,1x_1 - 0,3x_2 \rightarrow \max \\ -30x_1 + 19x_2 \geq -108 \\ 6x_1 + 4x_2 \leq 45 \\ 12x_1 + 35x_2 \leq 252 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 11 | $\begin{cases} f(X) = -4,6x_1 - 10x_2 \rightarrow \min \\ 22x_1 - 65x_2 \leq 33 \\ -x_1 \geq -8 \\ -3x_1 + 16x_2 \leq 24 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 26 | $\begin{cases} f(X) = 0,5x_1 + 2x_2 \rightarrow \max \\ 5x_1 - 16x_2 \leq 14 \\ -6x_1 + 3x_2 \geq -33 \\ -16x_1 + 75x_2 \leq 180 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 12 | $\begin{cases} f(X) = -10,5x_1 - 3,5x_2 \rightarrow \min \\ 8x_1 - 5x_2 \leq 48 \\ 2x_1 + x_2 \leq 21 \\ x_1 - 4x_2 \geq -12 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 27 | $\begin{cases} f(X) = 7,5x_1 + 8,4x_2 \rightarrow \max \\ 4x_1 - 7x_2 \leq 8 \\ 22x_1 - 7x_2 \leq 107 \\ 8x_1 - 9x_2 \geq -45 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |

| | | | |
|-----------|---|-----------|--|
| 13 | $\begin{cases} f(X) = -0,5x_1 - 6x_2 \rightarrow \min \\ -2x_1 + x_2 \geq -9 \\ 6x_1 + 2x_2 \leq 47 \\ 3x_1 + 12x_2 \leq 84 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 28 | $\begin{cases} f(X) = 4,4x_1 + 2,7x_2 \rightarrow \max \\ -2x_1 + x_2 \geq -3 \\ 7x_1 - x_2 \leq 27 \\ -x_1 + 5x_2 \leq 35 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 14 | $\begin{cases} f(X) = -8x_1 - 0,5x_2 \rightarrow \min \\ -2x_1 + 5x_2 \geq -5 \\ 5x_1 - 2x_2 \leq 21 \\ -3x_1 + 12x_2 \leq 24 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 29 | $\begin{cases} f(X) = 1,7x_1 - 8,5x_2 \rightarrow \max \\ 2x_1 - 8x_2 \leq 3 \\ 5x_1 - 3x_2 \leq 16 \\ x_1 - 5x_2 \geq -10 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |
| 15 | $\begin{cases} f(X) = -7,5x_1 - 3,5x_2 \rightarrow \min \\ 15x_1 - 7x_2 \leq 27 \\ 5x_1 - 2x_2 \leq 10 \\ 2x_1 - 4x_2 \geq -12 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ | 30 | $\begin{cases} f(X) = 7,6x_1 + 3,5x_2 \rightarrow \max \\ -10x_1 - 14x_2 \geq -115 \\ 6x_1 + 14x_2 \leq 83 \\ 2x_1 + 9x_2 \leq 45 \\ x_1 \geq 0, \quad x_2 \geq 0 \end{cases}$ |

Задача 2. Транспортная задача.

На пяти складах хранится a_i , $i = \overline{1,5}$ единиц одного и того же груза. Этот груз требуется доставить пяти потребителям, заказы которых составляют b_j , $j = \overline{1,5}$ единиц груза соответственно. Стоимости перевозок c_{ij} единиц груза со склада i потребителю j заданы транспортной таблицей. Требуется составить план перевозок, при котором запасы всех поставщиков вывозятся полностью, запросы всех потребителей удовлетворяются полностью, а суммарные затраты на перевозку всех грузов минимальны.

Задание:

- 1) Составить математическую модель задачи.
- 2) Найти оптимальное решение ТЗ средствами Matlab (или Excel).

Вариант 1

| $b_j \backslash a_i$ | 10 | 10 | 25 | 25 | 30 |
|----------------------|----|----|----|----|----|
| 10 | 1 | 5 | 7 | 9 | 3 |
| 20 | 4 | 6 | 4 | 7 | 13 |
| 10 | 1 | 5 | 3 | 4 | 9 |
| 30 | 2 | 4 | 2 | 10 | 3 |
| 10 | 3 | 2 | 5 | 6 | 4 |

Вариант 2

| $b_j \backslash a_i$ | 100 | 200 | 200 | 300 | 200 |
|----------------------|-----|-----|-----|-----|-----|
| 100 | 4 | 3 | 5 | 2 | 3 |
| 200 | 7 | 1 | 2 | 3 | 1 |
| 300 | 9 | 2 | 4 | 5 | 6 |
| 100 | 1 | 3 | 6 | 4 | 10 |
| 200 | 5 | 8 | 15 | 6 | 15 |

Вариант 3

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 200 | 400 | 100 | 200 | 100 |
| 200 | 1 | 7 | 12 | 2 | 5 |
| 100 | 2 | 3 | 8 | 4 | 7 |
| 200 | 3 | 5 | 4 | 6 | 9 |
| 400 | 4 | 4 | 3 | 8 | 2 |
| 400 | 5 | 3 | 7 | 10 | 1 |

Вариант 4

| | | | | | |
|----------------------|---|----|----|----|----|
| $b_j \backslash a_i$ | 5 | 10 | 15 | 15 | 15 |
| 10 | 2 | 5 | 5 | 6 | 7 |
| 5 | 4 | 3 | 4 | 4 | 3 |
| 5 | 5 | 2 | 3 | 6 | 2 |
| 10 | 3 | 6 | 5 | 7 | 8 |
| 15 | 1 | 9 | 7 | 6 | 4 |

Вариант 5

| | | | | | |
|----------------------|----|----|----|----|----|
| $b_j \backslash a_i$ | 10 | 30 | 30 | 30 | 40 |
| 10 | 3 | 1 | 3 | 4 | 3 |
| 30 | 5 | 1 | 2 | 2 | 6 |
| 60 | 2 | 3 | 4 | 1 | 1 |
| 10 | 6 | 2 | 5 | 3 | 2 |
| 60 | 3 | 7 | 4 | 4 | 1 |

Вариант 6

| | | | | | |
|----------------------|----|----|----|----|----|
| $b_j \backslash a_i$ | 20 | 30 | 40 | 40 | 40 |
| 20 | 4 | 5 | 2 | 4 | 3 |
| 40 | 3 | 1 | 3 | 5 | 2 |
| 80 | 2 | 7 | 6 | 8 | 6 |
| 40 | 3 | 3 | 1 | 4 | 9 |
| 20 | 1 | 6 | 9 | 2 | 7 |

Вариант 7

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 100 | 200 | 200 | 300 | 400 |
| 100 | 1 | 3 | 4 | 1 | 3 |
| 200 | 5 | 4 | 5 | 7 | 5 |
| 400 | 4 | 9 | 5 | 10 | 9 |
| 200 | 7 | 7 | 5 | 8 | 13 |
| 100 | 12 | 10 | 8 | 11 | 6 |

Вариант 8

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 200 | 200 | 300 | 300 | 100 |
| 300 | 4 | 6 | 3 | 4 | 1 |
| 200 | 7 | 3 | 5 | 2 | 2 |
| 100 | 5 | 3 | 2 | 4 | 4 |
| 100 | 2 | 3 | 4 | 6 | 5 |
| 200 | 1 | 4 | 4 | 3 | 3 |

Вариант 9

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 200 | 400 | 400 | 300 | 500 |
| 200 | 1 | 6 | 9 | 3 | 4 |
| 400 | 3 | 2 | 2 | 4 | 5 |
| 600 | 4 | 5 | 4 | 7 | 6 |
| 200 | 1 | 4 | 3 | 9 | 8 |
| 200 | 7 | 9 | 7 | 1 | 9 |

Вариант 10

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 150 | 200 | 200 | 400 | 200 |
| 150 | 1 | 4 | 7 | 2 | 4 |
| 300 | 3 | 6 | 3 | 9 | 6 |
| 250 | 4 | 8 | 12 | 2 | 5 |
| 150 | 1 | 5 | 9 | 13 | 7 |
| 200 | 2 | 3 | 4 | 6 | 5 |

Вариант 11

| | | | | | |
|----------------------|----|----|----|----|----|
| $b_j \backslash a_i$ | 40 | 60 | 40 | 60 | 20 |
| 20 | 3 | 3 | 4 | 2 | 3 |
| 40 | 1 | 2 | 1 | 5 | 3 |
| 60 | 4 | 8 | 2 | 9 | 12 |
| 40 | 5 | 7 | 9 | 6 | 5 |
| 20 | 10 | 14 | 17 | 7 | 6 |

Вариант 12

| | | | | | |
|----------------------|-----|-----|-----|-----|-----|
| $b_j \backslash a_i$ | 300 | 200 | 300 | 100 | 400 |
| 300 | 3 | 4 | 3 | 1 | 5 |
| 200 | 2 | 3 | 5 | 6 | 8 |
| 100 | 1 | 2 | 3 | 3 | 4 |
| 200 | 4 | 5 | 7 | 9 | 9 |
| 300 | 5 | 6 | 8 | 4 | 7 |

Вариант 13

| $b_j \backslash a_i$ | 20 | 20 | 40 | 10 | 30 |
|----------------------|----|----|----|----|----|
| 20 | 1 | 1 | 3 | 4 | 5 |
| 10 | 2 | 3 | 4 | 2 | 6 |
| 20 | 1 | 1 | 4 | 7 | 8 |
| 30 | 5 | 6 | 3 | 4 | 7 |
| 10 | 4 | 5 | 7 | 6 | 4 |

Вариант 14

| $b_j \backslash a_i$ | 200 | 300 | 400 | 200 | 300 |
|----------------------|-----|-----|-----|-----|-----|
| 200 | 1 | 3 | 4 | 2 | 5 |
| 200 | 1 | 2 | 4 | 1 | 6 |
| 300 | 3 | 4 | 5 | 9 | 8 |
| 300 | 6 | 3 | 7 | 6 | 7 |
| 100 | 5 | 6 | 7 | 3 | 4 |

Вариант 15

| $b_j \backslash a_i$ | 300 | 150 | 300 | 150 | 250 |
|----------------------|-----|-----|-----|-----|-----|
| 150 | 2 | 1 | 3 | 1 | 5 |
| 250 | 8 | 3 | 7 | 4 | 6 |
| 250 | 6 | 4 | 9 | 3 | 4 |
| 150 | 5 | 2 | 4 | 2 | 3 |
| 150 | 4 | 6 | 2 | 3 | 4 |

Вариант 16

| $b_j \backslash a_i$ | 50 | 50 | 100 | 100 | 50 |
|----------------------|----|----|-----|-----|----|
| 50 | 3 | 4 | 6 | 5 | 13 |
| 50 | 6 | 3 | 7 | 6 | 10 |
| 100 | 10 | 5 | 2 | 2 | 6 |
| 150 | 9 | 4 | 4 | 9 | 5 |
| 100 | 3 | 2 | 4 | 2 | 3 |

Вариант 17

| $b_j \backslash a_i$ | 200 | 200 | 400 | 200 | 100 |
|----------------------|-----|-----|-----|-----|-----|
| 200 | 5 | 2 | 1 | 6 | 4 |
| 300 | 6 | 2 | 4 | 4 | 6 |
| 200 | 9 | 2 | 3 | 7 | 5 |
| 200 | 7 | 3 | 5 | 8 | 7 |
| 100 | 3 | 2 | 4 | 2 | 3 |

Вариант 18

| $b_j \backslash a_i$ | 100 | 150 | 150 | 100 | 300 |
|----------------------|-----|-----|-----|-----|-----|
| 50 | 3 | 4 | 5 | 4 | 1 |
| 100 | 1 | 2 | 7 | 1 | 5 |
| 150 | 4 | 6 | 6 | 3 | 7 |
| 100 | 2 | 7 | 4 | 7 | 2 |
| 200 | 3 | 8 | 9 | 4 | 5 |

Вариант 19

| $b_j \backslash a_i$ | 400 | 600 | 500 | 400 | 500 |
|----------------------|-----|-----|-----|-----|-----|
| 400 | 1 | 2 | 3 | 1 | 2 |
| 500 | 3 | 4 | 2 | 4 | 5 |
| 600 | 5 | 7 | 6 | 3 | 9 |
| 400 | 4 | 10 | 15 | 4 | 8 |
| 200 | 3 | 4 | 5 | 3 | 7 |

Вариант 20

| $b_j \backslash a_i$ | 100 | 150 | 150 | 100 | 100 |
|----------------------|-----|-----|-----|-----|-----|
| 50 | 3 | 4 | 5 | 4 | 6 |
| 100 | 1 | 5 | 4 | 1 | 5 |
| 150 | 4 | 6 | 6 | 3 | 4 |
| 100 | 2 | 7 | 4 | 7 | 2 |
| 100 | 1 | 9 | 6 | 3 | 2 |

Вариант 21

| $b_j \backslash a_i$ | 500 | 250 | 500 | 750 | 500 |
|----------------------|-----|-----|-----|-----|-----|
| 250 | 3 | 1 | 8 | 1 | 4 |
| 500 | 2 | 5 | 2 | 3 | 5 |
| 750 | 9 | 4 | 6 | 5 | 7 |
| 250 | 7 | 3 | 10 | 3 | 2 |
| 500 | 6 | 6 | 4 | 7 | 8 |

Вариант 22

| $b_j \backslash a_i$ | 300 | 900 | 600 | 900 | 300 |
|----------------------|-----|-----|-----|-----|-----|
| 300 | 1 | 3 | 4 | 5 | 1 |
| 600 | 9 | 5 | 2 | 4 | 8 |
| 900 | 3 | 4 | 5 | 4 | 3 |
| 600 | 5 | 7 | 2 | 6 | 6 |
| 300 | 1 | 4 | 3 | 7 | 8 |

Вариант 23

| $b_j \backslash a_i$ | 200 | 300 | 200 | 300 | 100 |
|----------------------|-----|-----|-----|-----|-----|
| 100 | 2 | 3 | 4 | 5 | 1 |
| 200 | 2 | 4 | 2 | 6 | 7 |
| 300 | 6 | 5 | 4 | 5 | 4 |
| 400 | 4 | 6 | 7 | 6 | 9 |
| 400 | 5 | 7 | 6 | 9 | 8 |

Вариант 24

| $b_j \backslash a_i$ | 50 | 150 | 200 | 150 | 100 |
|----------------------|----|-----|-----|-----|-----|
| 50 | 4 | 5 | 6 | 10 | 9 |
| 100 | 6 | 3 | 8 | 4 | 3 |
| 150 | 5 | 1 | 3 | 1 | 7 |
| 150 | 7 | 2 | 4 | 2 | 3 |
| 100 | 1 | 5 | 7 | 8 | 4 |

Вариант 25

| $b_j \backslash a_i$ | 200 | 300 | 200 | 200 | 100 |
|----------------------|-----|-----|-----|-----|-----|
| 200 | 1 | 5 | 1 | 1 | 5 |
| 300 | 4 | 2 | 6 | 7 | 9 |
| 100 | 3 | 4 | 5 | 6 | 5 |
| 300 | 4 | 2 | 3 | 3 | 6 |
| 300 | 6 | 2 | 3 | 5 | 4 |

Вариант 26

| $b_j \backslash a_i$ | 100 | 200 | 200 | 100 | 200 |
|----------------------|-----|-----|-----|-----|-----|
| 100 | 2 | 3 | 4 | 2 | 5 |
| 200 | 3 | 1 | 1 | 3 | 1 |
| 300 | 4 | 3 | 3 | 5 | 4 |
| 200 | 5 | 1 | 2 | 6 | 7 |
| 100 | 2 | 9 | 8 | 7 | 6 |

Вариант 27

| $b_j \backslash a_i$ | 200 | 200 | 400 | 100 | 100 |
|----------------------|-----|-----|-----|-----|-----|
| 200 | 2 | 2 | 3 | 1 | 2 |
| 100 | 1 | 2 | 3 | 4 | 5 |
| 200 | 4 | 3 | 6 | 5 | 8 |
| 100 | 1 | 2 | 3 | 7 | 5 |
| 200 | 4 | 3 | 5 | 7 | 6 |

Вариант 28

| $b_j \backslash a_i$ | 50 | 100 | 100 | 200 | 200 |
|----------------------|----|-----|-----|-----|-----|
| 50 | 1 | 4 | 5 | 6 | 1 |
| 100 | 2 | 2 | 2 | 5 | 5 |
| 150 | 3 | 6 | 8 | 3 | 4 |
| 200 | 4 | 7 | 9 | 4 | 8 |
| 100 | 5 | 2 | 2 | 7 | 9 |

Вариант 29

| $b_j \backslash a_i$ | 100 | 100 | 200 | 200 | 300 |
|----------------------|-----|-----|-----|-----|-----|
| 300 | 1 | 2 | 3 | 4 | 8 |
| 200 | 4 | 5 | 6 | 2 | 6 |
| 100 | 1 | 1 | 3 | 4 | 5 |
| 200 | 3 | 3 | 2 | 2 | 7 |
| 300 | 5 | 6 | 7 | 8 | 10 |

Вариант 30

| $b_j \backslash a_i$ | 100 | 300 | 300 | 300 | 600 |
|----------------------|-----|-----|-----|-----|-----|
| 300 | 4 | 2 | 2 | 5 | 3 |
| 600 | 3 | 3 | 4 | 5 | 5 |
| 100 | 1 | 2 | 3 | 4 | 6 |
| 300 | 2 | 6 | 1 | 1 | 8 |
| 600 | 3 | 4 | 5 | 5 | 9 |