Запишем матрицу в виде:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A = | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  | | --- | --- | --- | --- | | 4 | 0 | 4 | 5 | | 0 | 1 | 5 | 6 | | -2 | 2 | 2 | 0 | | 1 | -5 | 1 | 3 | |  | |  |

**Найдем определитель, использовав разложение по 1-му столбцу:**  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | **0** | **4** | **5** |
| **0** | 1 | 5 | 6 |
| **-2** | 2 | 2 | 0 |
| **1** | -5 | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 1 | 5 | 6 | | 2 | 2 | 0 | | -5 | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **1** | **5** | **6** |
| **2** | 2 | 0 |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 2 | 0 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (2\*3-1\*0) = 6  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **1** | 5 | 6 |
| **2** | **2** | **0** |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 6 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (5\*3-1\*6) = 9  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **1** | 5 | 6 |
| **2** | 2 | 0 |
| **-5** | **1** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 6 | | 2 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (5\*0-2\*6) = -12  
Определитель минора:  
∆1,1 = (-1)1+11\*6+(-1)2+12\*9+(-1)3+1(-5)\*(-12) = 1\*6-2\*9+(-5)\*(-12) = 48  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | 0 | 4 | 5 |
| **0** | **1** | **5** | **6** |
| **-2** | 2 | 2 | 0 |
| **1** | -5 | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 0 | 4 | 5 | | 2 | 2 | 0 | | -5 | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | **4** | **5** |
| **2** | 2 | 0 |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 2 | 0 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (2\*3-1\*0) = 6  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **2** | **2** | **0** |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (4\*3-1\*5) = 7  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **2** | 2 | 0 |
| **-5** | **1** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 2 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (4\*0-2\*5) = -10  
Определитель минора:  
∆2,1 = (-1)1+10\*6+(-1)2+12\*7+(-1)3+1(-5)\*(-10) = 0\*6-2\*7+(-5)\*(-10) = 36  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | 0 | 4 | 5 |
| **0** | 1 | 5 | 6 |
| **-2** | **2** | **2** | **0** |
| **1** | -5 | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 0 | 4 | 5 | | 1 | 5 | 6 | | -5 | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | **4** | **5** |
| **1** | 5 | 6 |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 6 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (5\*3-1\*6) = 9  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **1** | **5** | **6** |
| **-5** | 1 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 1 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (4\*3-1\*5) = 7  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **1** | 5 | 6 |
| **-5** | **1** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 5 | 6 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (4\*6-5\*5) = -1  
Определитель минора:  
∆3,1 = (-1)1+10\*9+(-1)2+11\*7+(-1)3+1(-5)\*(-1) = 0\*9-1\*7+(-5)\*(-1) = -2  
Минор для (4,1):  
Вычеркиваем из матрицы 4-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | 0 | 4 | 5 |
| **0** | 1 | 5 | 6 |
| **-2** | 2 | 2 | 0 |
| **1** | **-5** | **1** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ4,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 0 | 4 | 5 | | 1 | 5 | 6 | | 2 | 2 | 0 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | **4** | **5** |
| **1** | 5 | 6 |
| **2** | 2 | 0 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 6 | | 2 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (5\*0-2\*6) = -12  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **1** | **5** | **6** |
| **2** | 2 | 0 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 2 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (4\*0-2\*5) = -10  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **0** | 4 | 5 |
| **1** | 5 | 6 |
| **2** | **2** | **0** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 4 | 5 | | 5 | 6 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (4\*6-5\*5) = -1  
Определитель минора:  
∆4,1 = (-1)1+10\*(-12)+(-1)2+11\*(-10)+(-1)3+12\*(-1) = 0\*(-12)-1\*(-10)+2\*(-1) = 8  
**Определитель:**  
**∆ = (-1)1+14\*48+(-1)2+10\*36+(-1)3+1(-2)\*(-2)+(-1)4+11\*8 = 4\*48-0\*36+(-2)\*(-2)-1\*8 = 188.**

Запишем матрицу в виде:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A = | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  | | --- | --- | --- | --- | | 7 | 6 | 0 | 1 | | 1 | 3 | 5 | 0 | | 0 | 1 | -2 | 4 | | 1 | 1 | 2 | 3 | |  | |  |

**Найдем определитель, использовав разложение по 1-му столбцу:**  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **7** | **6** | **0** | **1** |
| **1** | 3 | 5 | 0 |
| **0** | 1 | -2 | 4 |
| **1** | 1 | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 3 | 5 | 0 | | 1 | -2 | 4 | | 1 | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **3** | **5** | **0** |
| **1** | -2 | 4 |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | -2 | 4 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = ((-2)\*3-2\*4) = -14  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **3** | 5 | 0 |
| **1** | **-2** | **4** |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 0 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (5\*3-2\*0) = 15  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **3** | 5 | 0 |
| **1** | -2 | 4 |
| **1** | **2** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 0 | | -2 | 4 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (5\*4-(-2)\*0) = 20  
Определитель минора:  
∆1,1 = (-1)1+13\*(-14)+(-1)2+11\*15+(-1)3+11\*20 = 3\*(-14)-1\*15+1\*20 = -37  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **7** | 6 | 0 | 1 |
| **1** | **3** | **5** | **0** |
| **0** | 1 | -2 | 4 |
| **1** | 1 | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 6 | 0 | 1 | | 1 | -2 | 4 | | 1 | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | **0** | **1** |
| **1** | -2 | 4 |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | -2 | 4 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = ((-2)\*3-2\*4) = -14  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **1** | **-2** | **4** |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (0\*3-2\*1) = -2  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **1** | -2 | 4 |
| **1** | **2** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | -2 | 4 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (0\*4-(-2)\*1) = 2  
Определитель минора:  
∆2,1 = (-1)1+16\*(-14)+(-1)2+11\*(-2)+(-1)3+11\*2 = 6\*(-14)-1\*(-2)+1\*2 = -80  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **7** | 6 | 0 | 1 |
| **1** | 3 | 5 | 0 |
| **0** | **1** | **-2** | **4** |
| **1** | 1 | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 6 | 0 | 1 | | 3 | 5 | 0 | | 1 | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | **0** | **1** |
| **3** | 5 | 0 |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 0 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (5\*3-2\*0) = 15  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **3** | **5** | **0** |
| **1** | 2 | 3 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | 2 | 3 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (0\*3-2\*1) = -2  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **3** | 5 | 0 |
| **1** | **2** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | 5 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (0\*0-5\*1) = -5  
Определитель минора:  
∆3,1 = (-1)1+16\*15+(-1)2+13\*(-2)+(-1)3+11\*(-5) = 6\*15-3\*(-2)+1\*(-5) = 91  
Минор для (4,1):  
Вычеркиваем из матрицы 4-ю строку и 1-й столбец.

|  |  |  |  |
| --- | --- | --- | --- |
| **7** | 6 | 0 | 1 |
| **1** | 3 | 5 | 0 |
| **0** | 1 | -2 | 4 |
| **1** | **1** | **2** | **3** |

Получаем:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ4,1 = | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  | | --- | --- | --- | | 6 | 0 | 1 | | 3 | 5 | 0 | | 1 | -2 | 4 | |  | |  |

Найдем определитель для этого минора.  
Минор для (1,1):  
Вычеркиваем из матрицы 1-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | **0** | **1** |
| **3** | 5 | 0 |
| **1** | -2 | 4 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ1,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 5 | 0 | | -2 | 4 | |  | |  |

Найдем определитель для этого минора.  
∆1,1 = (5\*4-(-2)\*0) = 20  
Минор для (2,1):  
Вычеркиваем из матрицы 2-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **3** | **5** | **0** |
| **1** | -2 | 4 |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ2,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | -2 | 4 | |  | |  |

Найдем определитель для этого минора.  
∆2,1 = (0\*4-(-2)\*1) = 2  
Минор для (3,1):  
Вычеркиваем из матрицы 3-ю строку и 1-й столбец.

|  |  |  |
| --- | --- | --- |
| **6** | 0 | 1 |
| **3** | 5 | 0 |
| **1** | **-2** | **4** |

Получаем:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Δ3,1 = | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | 0 | 1 | | 5 | 0 | |  | |  |

Найдем определитель для этого минора.  
∆3,1 = (0\*0-5\*1) = -5  
Определитель минора:  
∆4,1 = (-1)1+16\*20+(-1)2+13\*2+(-1)3+11\*(-5) = 6\*20-3\*2+1\*(-5) = 109  
**Определитель:**  
**∆ = (-1)1+17\*(-37)+(-1)2+11\*(-80)+(-1)3+10\*91+(-1)4+11\*109 = 7\*(-37)-1\*(-80)+0\*91-1\*109 = -288.**