#### **Task 6. Niche model**

Consider the niche model

 *xi*(0) = *xi*0, *i=*1,2.

**Question 1**. The system parameters are given. It is necessary to describe the system evolution for this case and explain the result.

**Question 2**. The effect is given. It is necessary to choose the system parameters for obtaining this result and explain the evolution of the system.

**Variants**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **№** | **Parameters** | | | | | | | | **Effect** |
| ***a*1** | ***a*2** | ***b*11** | ***b*12** | ***b*21** | ***b*22** | ***x*10** | ***x*20** |
| 1 | 3 | 2 | 2 | 1 | 2 | 3 | 1.5 | 2 | *x*1↓0, *x*2↑ |
| 2 | 2 | 3 | 3 | 2 | 1 | 2 | 1.5 | 3 | *x*1↓0, *x*2↓↑ |
| 3 | 3 | 1 | 6 | 3 | 2 | 2 | 0.5 | 0.5 | *x*1↓0, *x*2↓ |
| 4 | 1 | 5 | 2 | 1 | 3 | 4 | 2 | 2 | *x*1↓0, *x*2↑ |
| 5 | 4 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | *x*1↑, *x*2↑↓0 |
| 6 | 2 | 4 | 1 | 3 | 2 | 3 | 5 | 1 | *x*1↓, *x*2↓0 |
| 7 | 3 | 2 | 1.5 | 4 | 1 | 0.5 | 2 | 1 | *x*1↓, *x*2↓0 |
| 8 | 2 | 3 | 1 | 2 | 3 | 1.5 | 3 | 4 | *x*1↑, *x*2↓0 |
| 9 | 3 | 1 | 2 | 2 | 3 | 4 | 5 | 2 | *x*1↑, *x*2↑ |
| 10 | 1 | 4 | 2 | 2 | 1 | 2 | 1 | 3 | *x*1↓, *x*2↓ |
| 11 | 2 | 3 | 3 | 2 | 2 | 2 | 0.5 | 5 | *x*1↑, *x*2↑↓0 |

Remark. ↑ - the function increases, ↓↑ - the function first decreases and then increases,

↓ - the function decreases to non-zero value, ↓0 - the function decreases and tends to zero,

↑↓ - the function first increases and then decreases.