**Методы многомерной оптимизации**

**Метод градиентного спуска**

**Задача 1**. Минимизировать в *Е*2 функцию

*f(x1, x2)*=*α(x2+β-x12)2+(γ-x1)2+δx12*→*min*

**методом градиентного спуска**, завершив вычисления при *│∂f(x(k))/∂xi*│≤0,05, ***i***=1, 2.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **№**  **варианта** | **α** | **β** | **γ** | **δ** | ***x1(0)*** | ***x2(0)*** |
| **1** | 24 | 13 | 10 | 1 | 3 | 10 |
| **2** | 34 | 11 | 14 | 1 | 5 | 36 |
| **3** | 32 | 14 | 110 | 1 | 52 | 3009 |
| **4** | 29 | 15 | 12 | 2 | 2 | 0 |
| **5** | 14 | 12 | 16 | 3 | 2 | 2 |
| **6** | 17 | 15 | 36 | 5 | 5 | 18 |
| **7** | 13 | 19 | 30 | 9 | 1 | -12 |
| **8** | 94 | 14 | 27 | 2 | 11 | 64 |
| **9** | 71 | 40 | 35 | 4 | 9 | 7 |
| **10** | 87 | 9 | 18 | 8 | 0 | -8 |
| **11** | 13 | 31 | 72 | 8 | 10 | 30 |
| **12** | 5 | 67 | 18 | 5 | 1 | -60 |
| **13** | 6 | 72 | 40 | 7 | 8 | -45 |
| **14** | 2 | 24 | 70 | 9 | 5 | 28 |
| **15** | 3 | 38 | 55 | 4 | 8 | 85 |
| **16** | 7 | 3 | 693 | 98 | 5 | 49 |
| **17** | 9 | 20 | 56 | 6 | 10 | 42 |
| **18** | 7 | 69 | 18 | 5 | 0 | -63 |
| **19** | 3 | 9 | 60 | 14 | 6 | 5 |
| **20** | 91 | 33 | 120 | 9 | 10 | 113 |