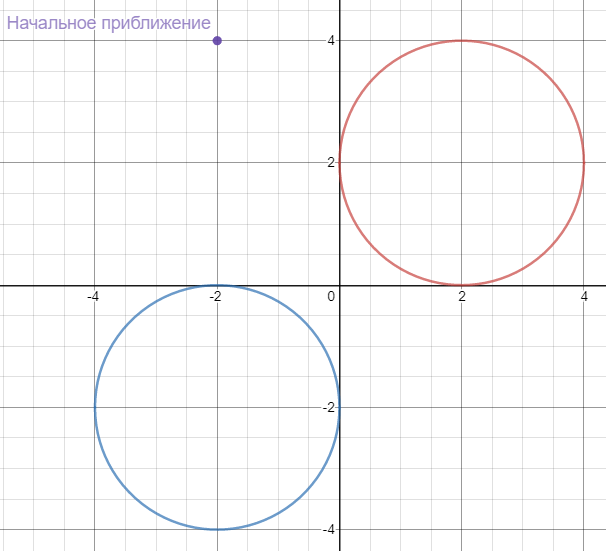
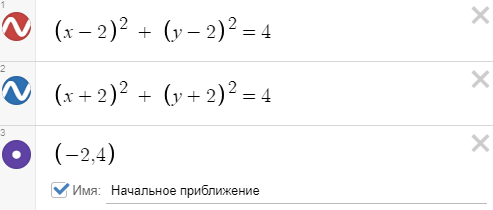
|  |  |  |
| --- | --- | --- |
| Министерство науки и высшего образования  Российской Федерации | | |
| Федеральное государственное бюджетное  образовательное учреждение высшего образования | | |
| «Новосибирский государственный технический университет» | | |
|  | | |
| Кафедра теоретической и прикладной информатики | | |
|  | | |
| Лабораторная работа № 4 | | |
| по дисциплине «Численные методы» | | |
|  | | |
| **РЕШЕНИЕ СИСТЕМ НЕЛИНЕЙНЫХ УРАВНЕНИЙ****МЕТОДОМ НЬЮТОНА** | | |
|  | | |
|  | Факультет: | ПМИ |
| Группа: | ПМ-81 |
| Бригада: | 14 |
| Студенты: | Редут Анатолий |
|  | Ефремов Артур |
|  |  |
| Преподаватели: | Патрушев Илья Игоревич |
|  | Задорожный Александр Геннадьевич |
|  | | |
| Новосибирск | | |
| 2020 | | |



1 вариант

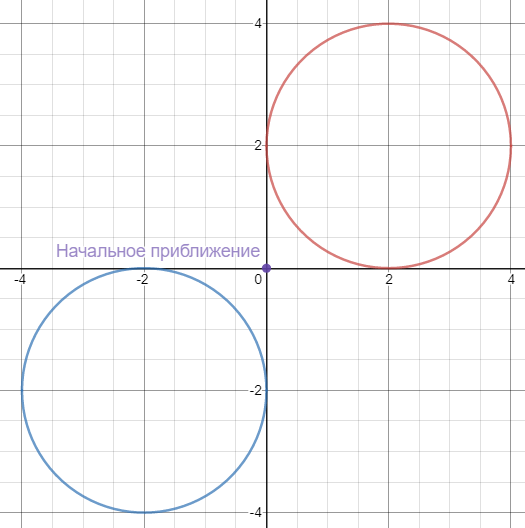
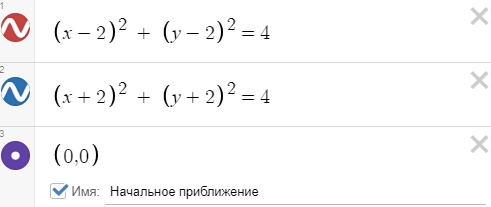
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -1.33333 | 1.33333 | 35.7771 |
| 1 | 1 | 0.0833333 | -0.0833333 | 10.6852 |
| 2 | 0.0078125 | -0.0107422 | 0.0107422 | 5.6765 |
| 3 | 0.00012207 | 0.000622105 | -0.000622105 | 5.65718 |
| . | . | . | . | . |
| 98 | 2.27374e-13 | -2.31288e-07 | 2.31288e-07 | 5.65685 |
| 99 | 5.68434e-14 | 1.44817e-08 | -1.44817e-08 | 5.65685 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -1.33333 | 1.33333 | 35.7771 |
| 1 | 1 | 0.0833333 | -0.0833333 | 10.6852 |
| 2 | 0.0078125 | -0.0107422 | 0.0107422 | 5.6765 |
| 3 | 0.00012207 | 0.000622105 | -0.000622105 | 5.65718 |
| . | . | . | . | . |
| 98 | 2.27374e-13 | -2.31288e-07 | 2.31288e-07 | 5.65685 |
| 99 | 5.68434e-14 | 1.44817e-08 | -1.44817e-08 | 5.65685 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -1.33333 | 1.33333 | 35.7771 |
| 1 | 1 | 0.0833333 | -0.0833333 | 10.6852 |
| 2 | 0.0078125 | -0.0107422 | 0.0107422 | 5.6765 |
| 3 | 0.00012207 | 0.000622105 | -0.000622105 | 5.65718 |
| . | . | . | . | . |
| 98 | 9.09495e-13 | -1.83996e-07 | 1.83996e-07 | 5.65685 |
| 99 | 5.68434e-14 | 1.24942e-07 | -1.24941e-07 | 5.65685 |



1 вариант

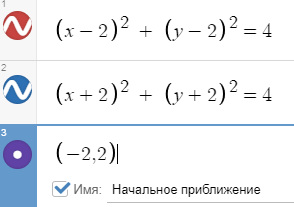
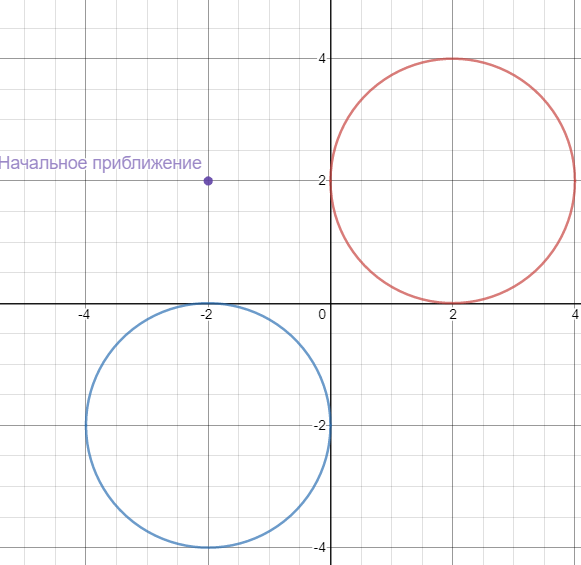
Cant solve!

2 вариант

Cant solve!

6 вариант

Cant solve!

1 вариант

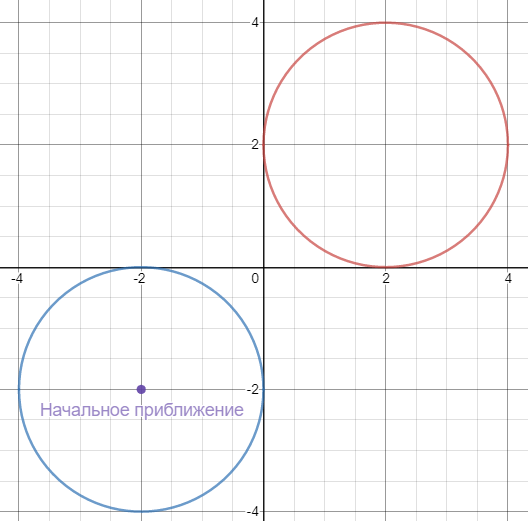
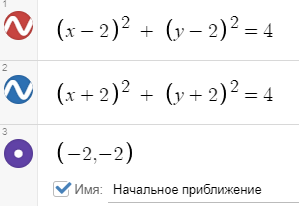
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -0.5 | 0.5 | 16.9706 |
| 1 | 0.25 | 0.0625 | -0.0625 | 6.36396 |
| 2 | 0.00390625 | -0.00012207 | 0.00012207 | 5.6679 |
| 3 | 1.49012e-08 | 9.09189e-13 | -9.09189e-13 | 5.65685 |
| . | . | . | . | . |
| 98 | 9.09495e-13 | -1.04023e-07 | 1.04023e-07 | 5.65685 |
| 99 | 5.68434e-14 | 4.42426e-07 | -4.42426e-07 | 5.65685 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -0.5 | 0.5 | 16.9706 |
| 1 | 0.25 | 0.0625 | -0.0625 | 6.36396 |
| 2 | 0.00390625 | -0.00012207 | 0.00012207 | 5.6679 |
| 3 | 1.49012e-08 | 9.09189e-13 | -9.09189e-13 | 5.65685 |
| . | . | . | . | . |
| 98 | 9.09495e-13 | -1.04023e-07 | 1.04023e-07 | 5.65685 |
| 99 | 5.68434e-14 | 4.42426e-07 | -4.42426e-07 | 5.65685 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -0.5 | 0.5 | 16.9706 |
| 1 | 0.25 | 0.0625 | -0.0625 | 6.36396 |
| 2 | 0.00390625 | -0.00012207 | 0.00012207 | 5.6679 |
| 3 | 1.49012e-08 | 5.29974e-12 | -5.2892e-12 | 5.65685 |
| . | . | . | . | . |
| 98 | 4.54747e-13 | -1.27425e-07 | 1.27425e-07 | 5.65685 |
| 99 | 5.68434e-14 | 3.18669e-07 | -3.18669e-07 | 5.65685 |



1 вариант

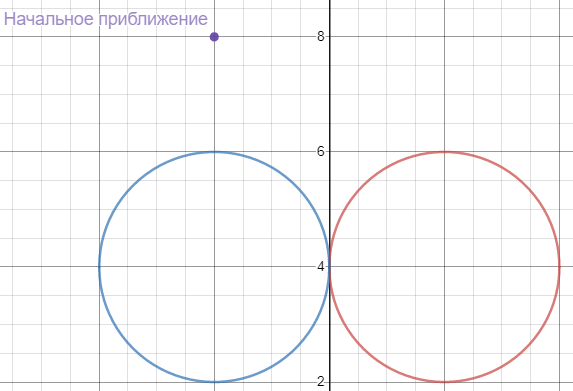
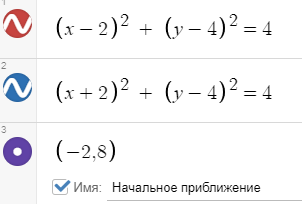
Cant solve!

2 вариант

Cant solve!

6 вариант

Cant solve!



1 вариант

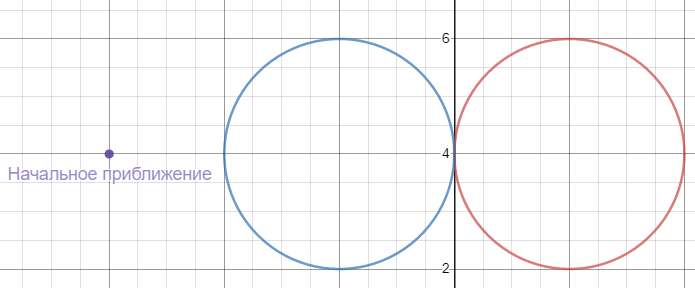
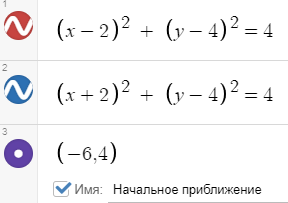
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 6.5 | 30.4631 |
| 1 | 1 | 0 | 5.25 | 8.83883 |
| 2 | 1 | 0 | 4.625 | 2.20971 |
| 3 | 1 | 0 | 4.3125 | 0.552427 |
| . | . | . | . | . |
| 21 | 1 | 0 | 4 | 8.03887e-12 |
| 22 | 1 | 0 | 4 | 2.00972e-12 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 6.5 | 30.4631 |
| 1 | 1 | 0 | 5.25 | 8.83883 |
| 2 | 1 | 0 | 4.625 | 2.20971 |
| 3 | 1 | 0 | 4.3125 | 0.552427 |
| . | . | . | . | . |
| 21 | 1 | 0 | 4 | 8.03887e-12 |
| 22 | 1 | 0 | 4 | 2.00972e-12 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 1.10845e-12 | 6.5 | 30.4631 |
| 1 | 1 | 3.70171e-25 | 5.25 | 8.83883 |
| 2 | 1 | 3.70171e-25 | 4.625 | 2.20971 |
| 3 | 1 | -1.38778e-17 | 4.3125 | 0.552427 |
| . | . | . | . | . |
| 21 | 1 | -1.47451e-17 | 4 | 8.03887e-12 |
| 22 | 1 | -1.47451e-17 | 4 | 2.00972e-12 |



1 вариант

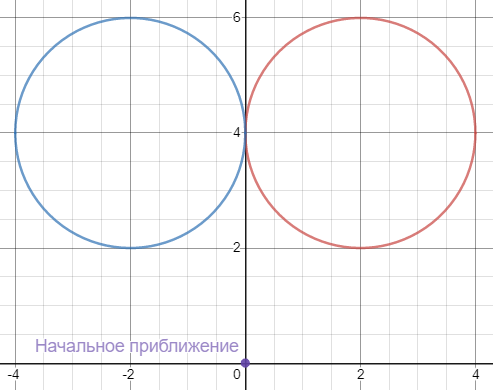
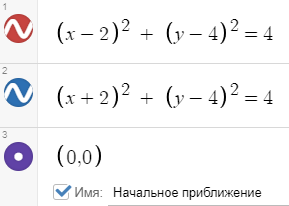
Cant solve!

2 вариант

Cant solve!

6 вариант

Cant solve!



1 вариант

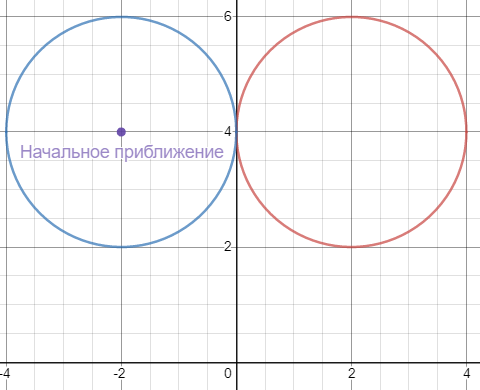
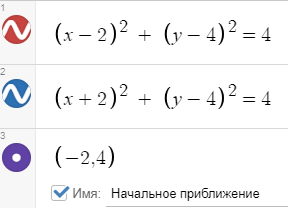
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 2 | 22.6274 |
| 1 | 1 | 0 | 3 | 5.65685 |
| 2 | 1 | 0 | 3.5 | 1.41421 |
| 3 | 1 | 0 | 3.75 | 0.353553 |
| . | . | . | . | . |
| 21 | 1 | 0 | 4 | 5.14488e-12 |
| 22 | 1 | 0 | 4 | 1.28622e-12 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 2 | 22.6274 |
| 1 | 1 | 0 | 3 | 5.65685 |
| 2 | 1 | 0 | 3.5 | 1.41421 |
| 3 | 1 | 0 | 3.75 | 0.353553 |
| . | . | . | . | . |
| 21 | 1 | 0 | 4 | 5.14488e-12 |
| 22 | 1 | 0 | 4 | 1.28622e-12 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 2 | 22.6274 |
| 1 | 1 | 0 | 3 | 5.65685 |
| 2 | 1 | 0 | 3.5 | 1.41421 |
| 3 | 1 | 0 | 3.75 | 0.353553 |
| . | . | . | . | . |
| 21 | 1 | 0 | 4 | 5.14488e-12 |
| 22 | 1 | 0 | 4 | 1.28622e-12 |



1 вариант

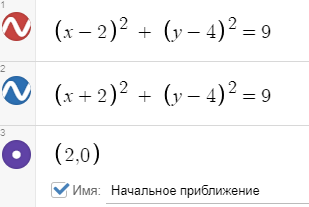
Cant solve!

2 вариант

Cant solve!

6 вариант

Cant solve!



1 вариант

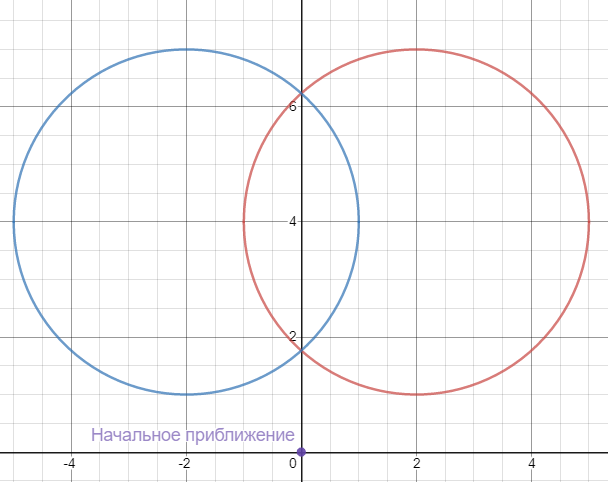
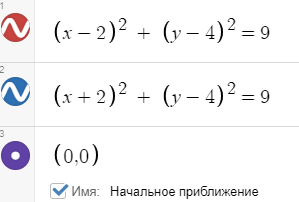
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 0.875 | 24.0416 |
| 1 | 1 | 0 | 1.6375 | 6.73961 |
| 2 | 1 | 0 | 1.76055 | 0.822233 |
| 3 | 1 | 0 | 1.76393 | 0.0214127 |
| 4 | 1 | 0 | 1.76393 | 1.61616e-05 |
| 5 | 1 | 0 | 1.76393 | 9.23466e-12 |
| 6 | 5.68434e-14 | 0 | 1.76393 | 0 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 0.875 | 24.0416 |
| 1 | 1 | 0 | 1.6375 | 6.73961 |
| 2 | 1 | 0 | 1.76055 | 0.822233 |
| 3 | 1 | 0 | 1.76393 | 0.0214127 |
| 4 | 1 | 0 | 1.76393 | 1.61616e-05 |
| 5 | 1 | 0 | 1.76393 | 9.23466e-12 |
| 6 | 5.68434e-14 | 0 | 1.76393 | 0 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | -1.10845e-12 | 0.875 | 24.0416 |
| 1 | 1 | -3.70171e-25 | 1.6375 | 6.73961 |
| 2 | 1 | -3.70171e-25 | 1.76055 | 0.822233 |
| 3 | 1 | -3.70171e-25 | 1.76393 | 0.0214127 |
| 4 | 1 | -3.70171e-25 | 1.76393 | 1.61616e-05 |
| 5 | 1 | -3.70171e-25 | 1.76393 | 9.23466e-12 |
| 6 | 5.68434e-14 | -3.70171e-25 | 1.76393 | 0 |



1 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 1.375 | 15.5563 |
| 1 | 1 | 0 | 1.73512 | 2.67375 |
| 2 | 1 | 0 | 1.76375 | 0.183403 |
| 3 | 1 | -2.71051e-20 | 1.76393 | 0.00115917 |
| 4 | 1 | -2.71034e-20 | 1.76393 | 4.74986e-08 |
| 5 | 5.68434e-14 | -2.71034e-20 | 1.76393 | 0 |

2 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 1.375 | 15.5563 |
| 1 | 1 | 0 | 1.73512 | 2.67375 |
| 2 | 1 | 0 | 1.76375 | 0.183403 |
| 3 | 1 | -2.71051e-20 | 1.76393 | 0.00115917 |
| 4 | 1 | -2.71034e-20 | 1.76393 | 4.74986e-08 |
| 5 | 5.68434e-14 | -2.71034e-20 | 1.76393 | 0 |

6 вариант

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | beta | x | y | norm |
| 0 | 1 | 0 | 1.375 | 15.5563 |
| 1 | 1 | 0 | 1.73512 | 2.67375 |
| 2 | 1 | 0 | 1.76375 | 0.183403 |
| 3 | 1 | 0 | 1.76393 | 0.00115917 |
| 4 | 1 | 1.65436e-24 | 1.76393 | 4.74986e-08 |
| 5 | 5.68434e-14 | 1.65436e-24 | 1.76393 | 0 |