Results

We were successful in solving the linear ordinary differential equation using Shooting method with the help of Euler’s Method which was found to be more efficient than Runge-Kutta method in the three iteration.

For non-linear ODE we had put make a while loop for when the condition was satisfied rather than using just 3 iteration and the result came out be that 7 iterations were needed to get to the target value.

|  |  |  |
| --- | --- | --- |
| *i* | y(xi) | *y’*(*xi*) |
| 1 | 1 | 1.6553 |
| 2 | 0.1 | 0.3566 |
| 3 | 0.54587 | 1.1056 |
| 4 | 0.48301 | 1.019 |
| 5 | 0.46922 | 0.99951 |
| 6 | 0.46957 | 1 |
| 7 | 0.46957 | 1 |

Table 1.3 Solution for Non-Linear PDE using while loop

Conclusion

Shooting method can be useful in solving second order ODEs where only boundary conditions are given. It is easy and uses Euler’s method or Runge-Kutta method to find the initial value problem with accuracy. Like how a cannon shooting out an object and adjusting its trajectory after every shot to land the object on a given mark, shooting method shoot the initial condition towards what can actually be the condition which satisfies the boundary conditions. The guess is adjusted with the help of interpolation which makes the next guess more accurate and hence, closer to the target.