Name:Mohammad Arshad
Roll:20PH20022

1) i)Single precision :

The smallest number that can be represented in the computer in single precision floating point number is 1.1920929e-07

The number of Iterations are 23

The respective log-log plots are drawn in the Jupyter notebook.

no. iterations vs value of x

ii)Double precision:

The smallest number that can be represented in the computer in double precison floating point number is 2.220446049250313e-16

The number of Iterations are 52

The respective log-log plots are drawn in the Jupyter notebook

no. iterations vs value of x

The results are same when verified by using in built “finfo” function

‘np.finfo(np.float32).eps’ and ‘np.finfo(np.float64).eps’

2) Fraction deviation as a function of x on a log-log plot is shown in the Jupyter notebook.

We see that by using equation A after 8 Iterations, the y values are remained as zeroes. In using equation B after 8 Iterations the y values are not zero but are calculated precisely.

If the result needs to be precise we can say that method B is superior. But if we require less iterations method A would be superior.