

Instructions

- Make a document (either in .doc and .pdf) containing code, results. Named the file using both of your Roll nos. *i.e.* 140100001_140100002
- Write Up: (i) Software in which code is written, (ii) output results for each case, and (iii) explanation of results.
- Please upload all assignments to turnitin

Assignment 4

Due date: 28/09/2017, time: 12 midnight

Interpolation

Runge's function is written as

$$f(x) = \cos\left(\frac{\pi}{2}x\right)$$

- a. Develop a plot of this function for the interval from $x = -1$ to 1 .
- b. Generate and interpolate using (i) Lagrange method, (ii) Newton Divided Difference Method, (iii) Least Square polynomial and (iv) Cubic spline for $N = 4, 10$ and 20 .
- c. The Maximum error predicted by each method for each interpolating point (N). How does error vary with (i) Method and (ii) N .
- d. The RMS error predicted by each method for each N . How does error vary with (i) Method and (ii) N .
- e. The plots should have neat labelling. The tables should have proper column headings. Comment on the results.