Assignment 4
Interpolation

Due – 10 Sep 2025, 2:30 pm,
Viva - 10 Sep 2025, Wed, 2:30 pm onwards

A function is written as,

$$f(x) = \frac{1}{1 + 25x^2}$$

a. Use N = 20 interpolation points from x= -1 to 1 (uniform interval size). Interpolate using
   (i) Lagrange's method,
   (ii) Newton's Divided Difference Method,
   (iii) Least Squares quadratic polynomial.

   N should be input to the code.

b. Design your code to give two outputs:
   i. In one single figure, plot the true function with all three interpolants. Use legends to show all plots.
   ii. Write a data file (ASCII format) that writes relative error at each point, with respect to true value, predicted by Least Squares quadratic polynomial.