

Lab-06

1. Write a MATLAB program that will carry out Lagrange interpolation to any order. The inputs to the function will be the existing data points $(x, f(x))$ (given in two separate vector variables x and fx), the values of x at which the function is to be interpolated (give in a vector xx) and the order of the interpolation (n). The function, when executed should return the values of the function at all points in xx as well as plot the original data (as points) and the interpolated values (as a curve).
 2. Verify the above program by extrapolating linear, quadratic and cubic functions.
 3. Consider the following set of data points: $x = [-10 \ -8 \ -6 \ -4 \ -2 \ 0 \ 2 \ 4 \ 6 \ 8 \ 10]$ and $fx = [-0.9999 \ -0.9993 \ -0.9951 \ -0.9640 \ -0.7616 \ 0 \ 0.7616 \ 0.9640 \ 0.9951 \ 0.9993 \ 0.9999]$. Do Lagrange interpolation to find the values of the function at intermediate points. (Do 1st, 2nd, 3rd.....all the way till 10th order polynomial interpolation.)
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