CSE 330: Summer 2024
Assignment-3 [CO3]
Total Marks: 15

1. An interpolating polynomial, $p(x) = 1.648(x - 1)$ is derived for the function $f(x) = x \ln x$ at the nodes ($x0 = 1$, $x1 = 3$) using the Lagrange method. Answer the following keeping up to 4 significant figures.

   a. (2 marks) Explain what you need to do to obtain a degree 3 interpolating polynomial for the same function f(x) and for the same nodal points ($x0 = 1$, $x1 = 3$).

   b. (6 marks) Calculate the bases of the degree 3 polynomial.

   c. (2 marks) Find the hermite polynomial using the bases found in (b).

2. a. (5 Marks) For $f(x) = 1/(1+x^2)$, where x epsilon [-5,5]. Find out the Chebychev's node for a degree 4 polynomial.