Scientific Computing (MA322)

Lab 05

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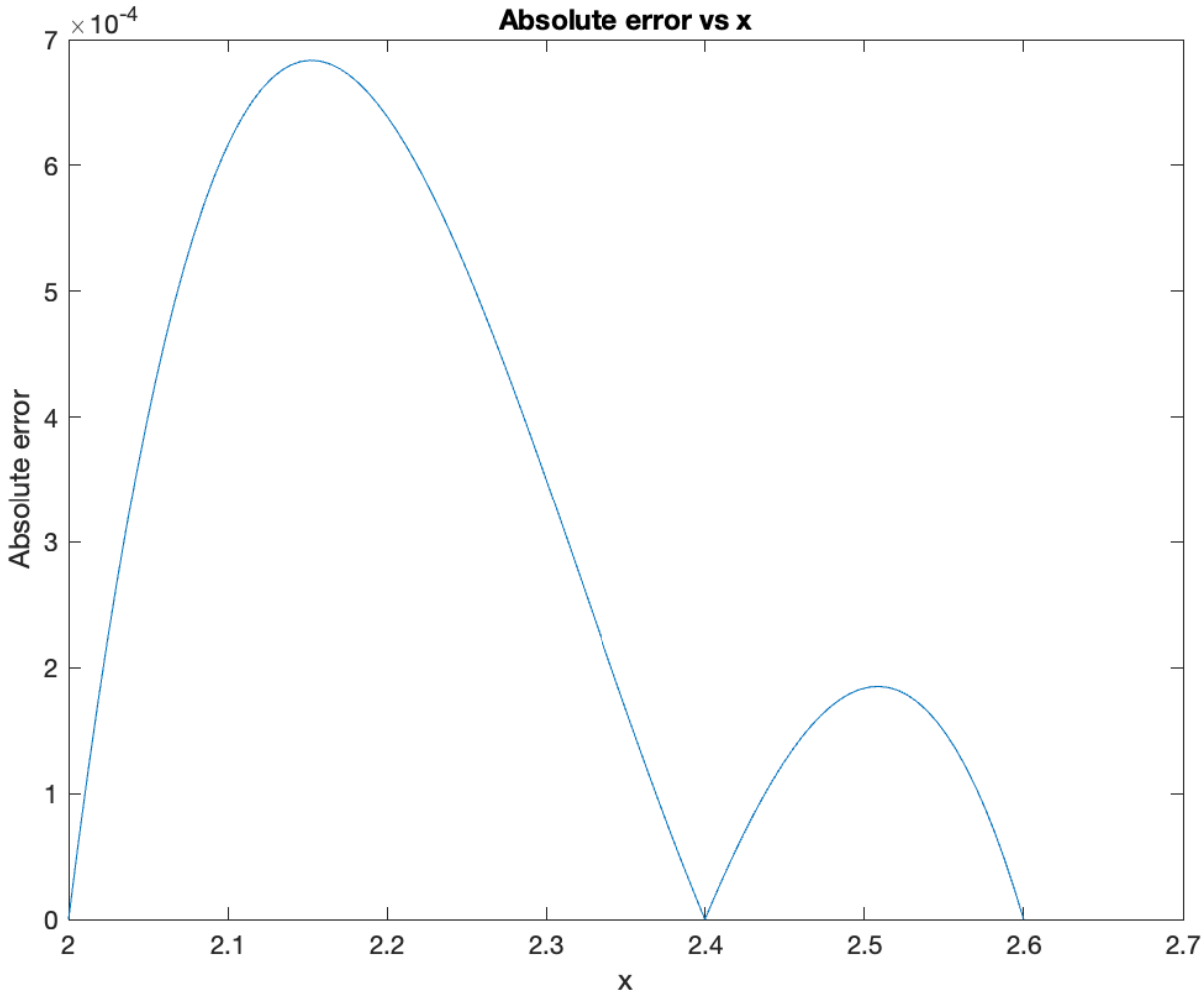
Q-1:
Approximate value of f(0.05) using the given data and the Newton forward-difference formula: 1.0513
Approximate value of f(0.65) using the given data and the Newton backward-difference formula: 1.9156

Q-2:
Absolute error on the interval [x_0, x_2]



Q-3: Lagrange interpolating polynomials to find the following

a) F(0.43) = 2.3606
b) F(0.9) = 0.44199

Q-4: Newton's divided differences to approximate the population (in thousands) in the years

a) 1940: 102397
b) 1975: 215042.75
c) 2020: 513443

Q-5:

a) Newton's divided difference: f(0.2) = -5.7786
b) Newton's divided difference after adding f(1.1): f(0.2) = -5.7786
c) Lagrange: f(0.2) = -5.7786
d) Lagrange after adding f(1.1): f(0.2) = -5.7786

The solution has been changed but it is of the order of magnitude -5 so negligible.