1 Problem 4.3

Do parts (a) and (b) of problem 4.3 in Chapra (2005) on page 80. As part (c) compute $f(x) = e^{-x}$ at $x_{i+1} = 1$ using a second order Taylor-series expansion and a base point of $x_i = 0.5$. Compute the true error for your result. Compare the true error for this case with the true error for your second-order estimate in part (b). Does your error improvement support the fact that for a second-order estimate, the error is proportional to $O(h^2)$? Why or why not?

2 Problem 4.8


3 Problem 5.6

Do parts (a) and (b) of problem 5.6 in Chapra (2005) on page 99. You can do the graphical part by plotting the function using the computer package of your choice.