Last updated: Monday 25th April, 2022 at 14:04.

Written assignment #4

Do only one of the two options for Problem 1.

Problem 1 (option 1). Let $x_0 < x_1$, $f \in C^1([x_0, x_1])$, and let $p \in \mathbb{P}_3$ be a cubic polynomial such that:
$$p^{(i)}(x_j) = f^{(i)}(x_j), \qquad i = 0, 1, \qquad j = 0, 1. \tag{1}$$
Show that p exists and is unique. (*Hint*: for uniqueness, assume that there are two possibilities: $p, q \in \mathbb{P}_3$ such that $p \neq q$. What can you say about the roots of $p - q$?)

Problem 1 (option 2). Prenter: Problem 1, Page 56.

Problem 2. Prenter: Problem 3, Page 56.

Problem 3. Prenter: Problem 4, Page 60.

Problem 4. Prenter: Problem 1, Page 73.