Homework 7

Problem 1: In matlab, it supports the cubic spline data interpolation.[1]

- Write a program which can solve cubic spline problems.
- Test your program by using some data and compare with the result of Matlab. For example, draw your approximation and compare with Matlab's.

Problem 2: Consider a quadratic least square

$$\min_E = \sum_{n=1}^{m} (y_i - f(x_i))^2,$$

with

$$f(x) = ax^2 + bx + c.$$

- Write down the three equations of

$$\nabla E = 0.$$

- Write a program doing quadratic least square.
- Randomly generate some \((x_i, y_i)\) and draw a figure to show your generated points and approximation.