

## Homework 3 due February 25th

### Numerical Analysis, Spring 2019

Please show your work. Whenever needed, also hand in your MATLAB codes and outputs. (You can use the MATLAB function *diary* to copy your command window output.)

1. Use appropriate Lagrange interpolating polynomials of degrees one, two, and three to approximate  $f(8.4)$  if  $f(8.1) = 16.94410$ ,  $f(8.3) = 17.56492$ ,  $f(8.6) = 18.50515$ ,  $f(8.7) = 18.82091$ . Write down the polynomials by hand, and use any software (MATLAB, Mathematica, etc.) to evaluate their values at  $x = 8.4$ . (Make sure to report both polynomials you build and the corresponding numerical values  $f(8.4)$ .)
2. Chapter 8: Exercises 1, 3, and 4(a).

*Note: In Exercise 1(a) you could use any of covered methods to fit a polynomial of degree 5. (for instance, you can even solve it as a least squares problem if you are familiar with it, or use the Lagrange form and its modifications or the Newton form. Thus, you have some freedom here.)*