

## ASE 211 Homework 6

Due: 12:00 noon, Friday, October 13.

1. Plot the function  $f(x) = x^3 \sin(x^5)$  for  $x$  between 0 and 4 using the matlab plotting function *plot*. Hint: evaluate the function at 100 points between 0 and 4, and save the values in arrays  $x$  and  $y$ , then say `plot(x,y)`. Print the resulting figure and hand it in.

2. Given the following data

i	$x_i$	$y_i$
1	0	4
2	1.1	-1.5
3	1.7	0.5
4	2.2	1.5

First, compute the linear interpolant of the data, then compute the Lagrange interpolant. For both interpolants, give the value at  $x = 2$ .

3. Write a Matlab code which allows a user to input data points, constructs the Lagrange interpolant, and plots the interpolant over the interval from  $x_1$  to  $x_n$  (assuming the data is ordered so that  $x_1 < x_2 < \dots < x_n$ .) Test your code on the data in problem A8.2 and plot the approximation to the drag coefficient  $C_d$  versus velocity  $v$ .

Hand in all matlab *m*-files and diaries.