Sample 9c

Write a MATLAB program as follows:

1) Read a data file (sample9a.dat) that has values of x and y (data points).

2) For each data point from the fourth one to the fourth to last one, do the following:

   a) Fit a second order polynomial to that data point and the data point on either side of it (fit the second order polynomial to three data points).

   b) Fit a fourth order polynomial to that data point and the two data points on either side of it (fit the fourth order polynomial to five data points).

   c) Fit a sixth order polynomial to that data point and the three data points on either side of it (fit the sixth order polynomial to seven data points).

   d) Use the fitted second order polynomial, the fitted fourth order polynomial and the fitted sixth order polynomial to calculate numerical values for the first derivative at that data point. Use the variables der2, der4 and der6 for the first derivative obtained from the fitted second order polynomial, fourth order polynomial and sixth order polynomial, respectively.

   e) Print the x coordinate of the data point and the numerical derivatives.

The output of this program should look like this:

```
x = 4.3   der2 = 0.85795   der4 =  0.99825   der6 =  1.08811
x = 5.4   der2 = 0.16873   der4 = -0.04561   der6 = -0.17204
```