## 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**