

Homework Problem Set II  
CH 347  
25 August 2006  
Instructor: John Shriver

Due: Wednesday, 30 August 2006.

1. Plot the function

$$t \cos(\pi t)$$

from  $t = 0$  to  $t = 3$  s using Igor. Use a sufficient number of points (e.g. 100) to accurately define the shape of the curve over this range. Locate the maxima and minima by taking the derivative in Igor. Plot the derivative of the function overlaid on the original function. Save the plot (e.g. as a tiff, jpeg, or PICT file) and incorporate it into a word processing file such as WORD. Discuss the relationship between the two curves.

2. Enter the following data into Igor using a text file:

time (s)	fluorescence
0	1.20
0.25	1.10
0.5	0.80
0.75	0.30
1.0	0.20
1.5	0.10
2.0	0.11
3.0	0.08
5.0	0.10

Plot the data with solid symbols, place a border around the plot on all sides, place tick marks pointing inwards, and place axis labels on the plot. Save the plot and add it to the word processing file used for question 1.

3. Fit the data above with an exponential decay function, and obtain the estimates of the fitted parameters with errors. Overlay the fitted curve onto the data with a smooth curve, plot the residuals above the plot, add axes labels, border, and place ticks inwards. Save the plot and add it to the word processing file used for question 1. Include the fitted parameters in the legend to the plot.

Turn in a print out of the word processing file.