

## Lab-session 7

- 1) Produce an XY-chart which plots a function  $f(x)$ . The x-data are meant to be stored in column A of a worksheet and the corresponding values  $f(x)$  in column B. Design your chart in such a way that it does not have any gridlines and such that the plot and the chart area have the same colour. Label the axis  $f(x)$  and  $x$ . Make the title dynamical such that it will change automatically when you change the function.

- a) With the above design plot the function

$$f(x) = x^3 + 2$$

for the range  $-3 < x < 3$ . Use the autofill function to select roughly 30 values for  $x$  in the specified range. Likewise produce the corresponding values  $f(x)$  with the autofill function. You can do this also simultaneously. Give your chart the title  $x^3 + 2$ .

- b) Now just change the entries of the cells in the columns A and B (using once more the autofill function) and plot the functions

$$f_1(x) = \sin(x) \quad f_2(x) = \cos(x) \quad f_3(x) = \cos(x) \exp(-x/4)$$

for the range  $0 < x < 2\pi$ . Change the title dynamically.

- c) Produce a chart with  $f_1(x)$ ,  $f_2(x)$  and  $f_3(x)$  all in one plot. In order to distinguish them use different line types and colours.

- 2) We have given the following table with informations on the climate of London. It contains the average highest and lowest temperatures (in Celsius  $^{\circ}C$ ), the amount of rain per month (in  $l/m^2$ ) and the days of rain per month.

<b>London</b>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
highest T	6.3	6.9	10.1	13.3	16.7	20.3	21.8	21.4	18.5	14.2	10.1	7.3
lowest T	2.2	2.2	3.3	5.5	8.2	11.6	13.5	13.2	11.3	7.9	5.3	3.5
rain	54	40	37	37	46	45	57	59	49	57	57	48
rain days	15	13	11	12	12	11	12	11	13	13	15	15

Produce several line charts displaying these data.

- a) A chart with three curves containing the average highest, average lowest and average temperature. The latter you have to compute.
- b) Having the data on your worksheet, use the  $\sum$ -function to compute the average temperature in London.
- c) One chart displaying four curves, the amount of rain per month, the days of rain, the amount of rain per rainy day and the average temperature. Use different scales on the vertical axis and display on one the average temperature and on the other the amount of rain per month, the days of rain, the amount of rain per rainy day.