# Lab-session 1

**1)** Use the pointing method to construct the formulae in a)-d):

    a) =1/(1/B2 + 1/B3 + 1/B4 + 1/B5)

    b) =(1/B2 + 1/B3 + 1/B4 + 1/B5)^(-1). Verify that this corresponds to a).

    c) =(A1+ B1)^3

    d) =A1^3 + 3 *A1^2 * B1 + 3 *A1 * B1^2 + B1^3. Verify that this corresponds to c).

    e) Give the name "x" to the cell A10 and the name "y" to the cell B10. Use then the formula   =(x+y)^3 to obtain the same result as c).

**2)** Produce a currency conversion table which converts from Euro to Pounds and to Dollars, based on the conversion rate of 0.6884 Euro to Pounds and 1.2382 from Euro to Dollars. Write down your numbers with a precision of four digits. Use the Autofill function to produce a column with 0.1-0.9, 1-10 and 10-100 (in Euro). Provide a field for the date and produce it using the TODAY-function. Make your table flexible such that when the convertion rate changes you only have to alter the convertion rate and the table will be changed automatically. Add a title saying "Currency conversion table". Use your table to convert 58.7 Euros into Pounds and Dollars. The table should look roughly as



Figure 1: Currency conversion table.

**3)**    a) Compute the future value of an investment using the Excel function FV. You deposit £2,500 into a savings account at a monthly interest rate of 0.5%. For the next years you plan to deposit £200 at the end of every month into your account. How much money will be in the account after 5 years?

      b) Use some Excel built-in functions to construct the function

$$f(x) = \begin{cases} \frac{\sin x}{x} & \text{for} & x \in \mathbb{R}\backslash 0 \\ 1 & \text{for} & x = 0 \end{cases} .$$

**4)** Design a worksheet which serves to compute the real roots

$$x_{1/2} = \frac{-b \pm \sqrt{\Delta}}{2a} \qquad \text{with} \ \ \Delta = b^2 - 4ac$$

of quadratic equations in the general form

$$ax^2 + bx + c = 0.$$

Depending on whether the discriminant $\Delta$ is positive, zero, or negative display the amount of positive roots. Your worksheet should produce (as an example)



Figure 2: Quadratic equation solver