Introduction to Laboratory 5

Laboratory 5 concerns the implementation of the **Lagrange** and **Hermite interpolation methods**. In these methods, a function $f(x)$ is approximated by a polynomial $p(x)$ (see Figure 1). The **Lagrange method** uses the values of f at *n* points x_j. In addition to $f(x_j)$, the **Hermite method** uses also the values of the derivative $f'(x_j)$ (see the main lecture and the Laboratory 5 for a definition of these methods).

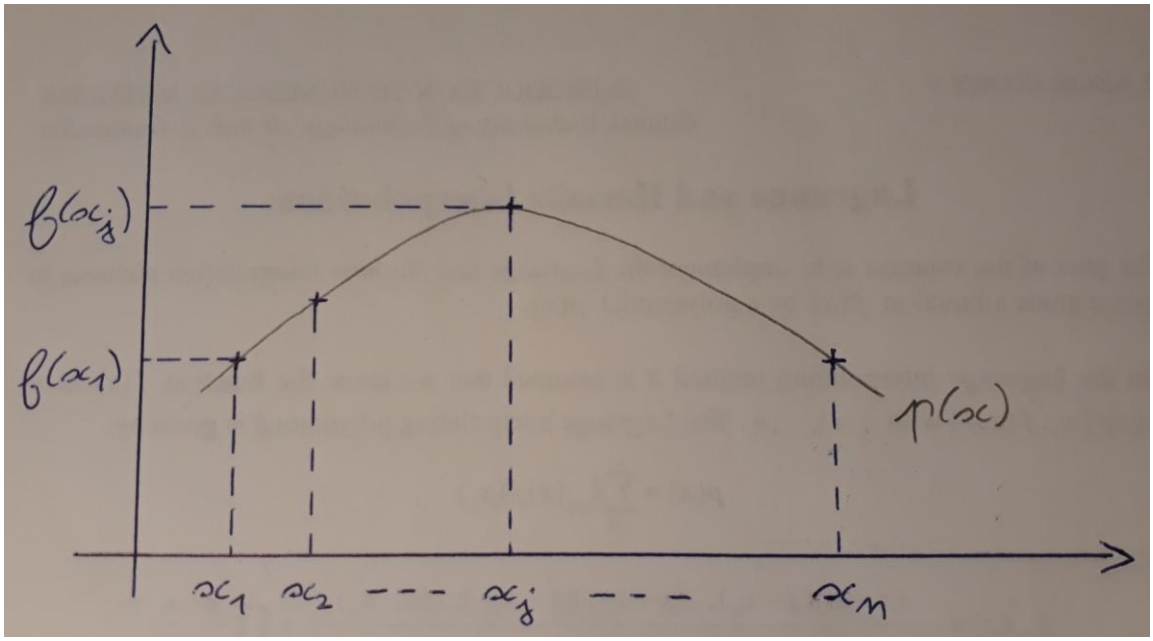

Figure 1: Example illustrating the interpolation of a function $f(x)$ using *n* points x_j. The interpolating polynomial is $p(x)$.

In Laboratory 5 you have to calculate the **Lagrange** and **Hermite** polynomials $p(x)$ in the interval $[-5,5]$ for the functions $f(x) = e^x$ (using 4 points) and $f(x) = 1/(1 + x^2)$ (using 11 points).