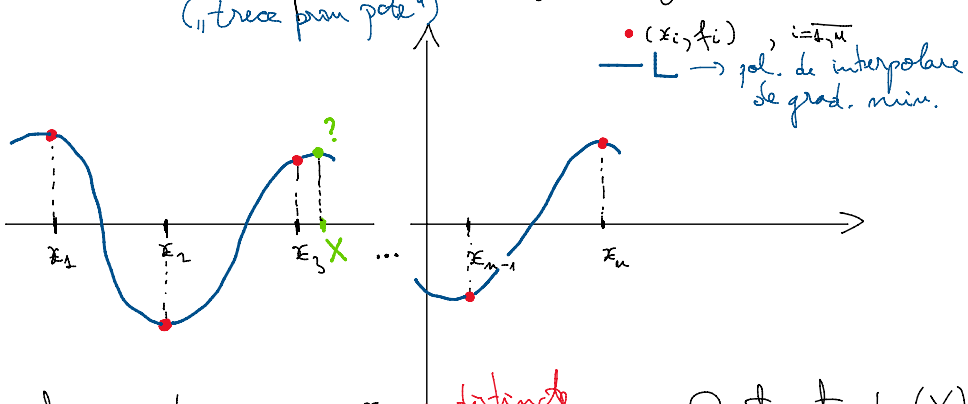
Lab 6

Monday, March 28, 2022 2:44 PM

Interpolare Lagrange

(„trece prin puncte")



• (x_i, f_i), $i = \overline{1,n}$

— L → pol. de interpolare de grad. min.

Input: • nodes: $x_1, \dots, x_n$ → distincte

• values: $f_1, \dots, f_n$ → nu neapărat distincte

• pct.: X

Output: $L(X)$

grad $L \leq n-1$, #noduri -1 → min. și L interpolează datele din input:

$$L(x_i) = f_i, \quad i = \overline{1,n} \qquad (*)$$

$$L(X) = a_0 + a_1 X + \dots + a_{n-1} X^{n-1}$$

$$(*) \iff \begin{bmatrix} 1 & x_1 & \dots & x_1^{n-1} \\ \vdots & \vdots & \dots & \vdots \\ 1 & x_n & \dots & x_n^{n-1} \end{bmatrix} \cdot \begin{bmatrix} a_0 \\ a_1 \\ \vdots \\ a_{n-1} \end{bmatrix} = \begin{bmatrix} f_1 \\ f_2 \\ \vdots \\ f_{n-1} \end{bmatrix}$$

Vandermonde (vezi lab. 3 ⇒ matrice prost cond. „instabil. numeric")

⇝ formula baricentrică