

w dodatku kiedy $i = j$

$$\begin{aligned} H'_{n,i}(x_i) &= -2L'_{n,i}(x_i) \cdot L^2_{n,i}(x_i) + [1 - 2(x_i - x_i)L'_{n,i}(x_i)]2L_{n,i}(x_i)L'_{n,i}(x_i) \\ &= -2L'_{n,i}(x_i) + 2L'_{n,i}(x_i) = 0. \end{aligned}$$

Wigc $H'_{n,j}(x_i) = 0 \quad \forall i, j$

Mamy też

$$\begin{aligned} \hat{H}'_{n,j}(x_i) &= L^2_{n,j}(x_i) + (x_i - x_j)2L_{n,j}(x_i)L'_{n,j}(x_i) \\ &= L_{n,j}(x_i)[L_{n,j}(x_i) + 2(x_i - x_j)L'_{n,j}(x_i)], \end{aligned}$$

Czyli

$$\begin{cases} H'_{n,j}(x_i) = 0 & \text{gdy } i \neq j \\ H'_{n,i}(x_i) = 1 & \end{cases} \iff \begin{cases} (x_i - x_i) = 0 & \text{dla } i \neq j \\ (x_i - x_i) = 1 & \end{cases} \iff \begin{cases} L_{n,j}(x_i) = 0 & \text{dla } i \neq j \\ L_{n,i}(x_i) = 1 & \end{cases}$$

Wigc

$$H'_{2n+1}(x_i) = \sum_{j=0}^n f(x_j) \cdot 0 + \sum_{\substack{j=0 \\ j \neq i}}^n f'(x_j) \cdot 0 + f'(x_i) \cdot 1 = f'(x_i).$$