

Hw : proof  $\frac{1}{w_i} = w'_{n+1}(x_i)$

$$w'_{n+1}(x) = (x-x_1) \cdots (x-x_j)$$

$$\begin{aligned} w'_{n+1}(x) &= (x-x_2) \cdots (x-x_j) + \cdots + (x-x_1) \cdots (x-x_{j-1}) \\ &= \sum_{i=1}^n \prod_{j \neq i} (x-x_j) \end{aligned}$$

$$\Rightarrow w'_{n+1}(x_i) = \prod_{j \neq i} (x_i - x_j) = \frac{1}{w_i} \quad \square$$

$$\begin{aligned} w_{n+1}(x) &= \prod_{j=0}^n (x-x_j) \\ w_i &= \frac{1}{\prod_{j \neq i} (x_i - x_j)} \end{aligned}$$