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

$$\omega_{n+1}(x) = \boxed{\prod_{j=0}^{n}(x-x_j)}$$

$$w_i = \frac{1}{\prod_{j\neq i}(x_i - x_j)}$$

$$\omega_{n+1}(x) = (x-x_1)\cdots(x-x_j)$$

$$\omega'_{n+1}(x) = (x-x_2)\cdots(x-x_j) + \cdots + (x-x_1)(x-x_{j-1})$$

$$= \sum_{i=1}^{n}\prod_{j\neq i}^{n}(x-x_j)$$

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