$$\underset{k=0}{\overset{\wedge}{\sum}} \ell_k(x) = 1$$

$$P_n(x) = \overset{\wedge}{\underset{k=0}{\sum}} f(x_k)\, \ell_k(x)$$

$$f(x) = P_n(x) + \frac{f^{(n+1)}(\xi)}{(n+1)!} (x-x_0)(x-x_1)\ldots(x-x_n)$$

IF $f(x) = 1 \to f \equiv 1$, $\quad f^{(n+1)}(\xi) = 0$

$$1 = \overset{\wedge}{\underset{k=0}{\sum}} 1 \cdot \ell_k(x) + \cancel{0}$$

$$\overset{\wedge}{\underset{k=0}{\sum}} \ell_k(x) = \cancel{0} \qquad \therefore$$