

Demstración

Dos polinomios distintos = $p(x)$ y $q(x)$ de grado $\leq n$

$$p(x_i) = y_i \text{ y } q(x_j) = y_j \text{ para } i = 0, 1, 2, \dots, n$$

$$r(x) = p(x) - q(x) \text{ para } i = 0, \dots, n$$

$$r(x_i) = p(x_i) - q(x_i) = 0$$

Para $n = 0$

$$p_0(x) = y_0$$

$$p(x_0) = y_0$$

$$\textcircled{1} \underline{p_{k-1}(x_i) = y_i} \text{ para } i = 0, 1, \dots, k-1$$

$$p_k(x) = p_{k-1}(x) + ((x-x_0)(x-x_1)(x-x_2)\dots(x-x_{k-1}))$$

$$p_k(x_i) = p_{k-1}(x_i) + ((x_i-x_0)(x_i-x_1)\dots(x_i-x_{k-1})) = \underline{\textcircled{1}}$$