Dados $x_0, x_2, \ldots, x_n$ en $[a,b]$

y sus imagenes $f(x_0), f(x_1), \ldots f(x_n)$

Ω: Conjunto soporte.

Existe un único poly de grado menor o igual a n que interpola a Ω

$$t_k(x) = (x-x_0)(x-x_1)\ldots(x-x_{k-1})(x-x_{k+1})\ldots(x-x_n)$$

Saltamos el valor x_k.

$$t_k(x_i) = 0 \quad \forall i \neq k$$

$$t_k(x_k) \neq 0 \qquad gr[t_k(x)] = n$$

Podemos def: Funciones Cardinales:

$$L_k(x) := \frac{t_k(x)}{t_k(x_k)}.$$

Cuánto vale $L_k(x)\big|_{x_j}$

$$L_k(x_j) = \frac{t_k(x_j)}{t_k(x_k)} = 0 \quad \forall\, i \neq k$$

Qué para x_k

$$L_k(x_k) = \frac{t_k(x_k)}{t_k(x_k)} = 1 \qquad gr\left[L_k(x)\right] = n$$

$$P(x) = L_0(x) f(x_0) + L_1(x) f(x_1) + \dots$$
$$L_n(x) f(x_n)$$

$P(x)$ interpola a f.

x_0	x_1	$f(x_0)$	$f(x_1)$
5	10	10	15

$$L_0 = \prod_{\substack{j=0 \\ j \neq i}}^{n} \frac{x - x_j}{x_0 - x_j} = \frac{(x - 10)}{5 - 10}$$

$$L_1 = \prod \frac{(x - x_j)}{x_1 - x_j} = \frac{(x - 5)}{10 - 5}$$

a, b, c $\quad f(a), f(b), f(c)$

$$\frac{(x-b)(x-c)}{(a-b)(a-c)} f(a) + \underline{\qquad\qquad} + \underline{\qquad\qquad}$$

$$C x^2 + C_2 x + \cancel{\ldots}^{0}$$

$$y_1 = a x_1^2 + b x_1 + c$$
$$y_2 = a x_2^2 + b x_2 + c$$
$$y_3 = a x_3^2 + b x_3 + c$$

$$y = \tan\theta\, x - (\quad) x^2$$

$$x_{max} = \frac{V_0^2 \sin(2\alpha)}{g}$$

$$6.5 = \frac{V_0^2 \sin(40)}{9.8}$$

$$V_0 = \sqrt{\frac{6.5 \times 9.8}{\sin 40}}$$

Supongamos que hay 2

$P_1(x_i) = f(x_i)$ ✓ $P_2(x_i) = f(x_i)$ ✓

$- P_1 - P_2$

$P_1(x_i) - P_2(x_i) = 0 \quad \forall\, i = 0, \dots n$

$(\underline{P_1 - P_2})(x_i) = 0$ ✓ $gr[\leq n]$

$gr[P_1 - P_2] = n+1$

$P_1 = P_2$