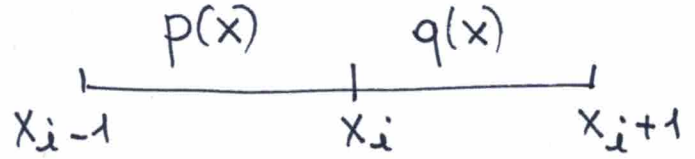
Condizione not-a-Knot. SPLINE CUBICA



$p, q \in \mathbb{P}_3$

$p(x) = ax^3 + bx^2 + cx + d$; $p'(x) = 3ax^2 + 2bx + c$; $p''(x) = 6ax + 2b$; $p'''(x) = 6a$

$q(x) = Ax^3 + Bx^2 + Cx + D$; $q'(x) = 3Ax^2 + 2Bx + C$; $q''(x) = 6Ax + 2B$; $q'''(x) = 6A$

Spline cubica

$p(x_i) = q(x_i)$ (1)

$p'(x_i) = q(x_i)$ (2)

$p''(x_i) = q''(x_i)$ (3)

Condizione aggiuntiva (nodo x_1 e x_{n-1})

$p'''(x_i) = q'''(x_i)$ (4)

$$\begin{cases} ax_i^3 + bx_i^2 + cx_i + d = Ax_i^3 + Bx_i^2 + Cx_i + D & (1) \\ 3ax_i^2 + 2bx_i + c = 3Ax_i^2 + 2Bx_i + C & (2) \\ 6ax_i + 2b = 6Ax_i + 2B & (3) \\ 6a = 6A & (4) \end{cases}$$

4) $a = A$

3) $6ax_i + 2b = 6Ax_i + 2B$

2) $3ax_i^2 + 2bx_i + c = 3Ax_i^2 + 2Bx_i + C$

1) $ax_i^3 + bx_i^2 + cx_i + d = Ax_i^3 + Bx_i^2 + Cx_i + D$

$a = A$

$b = B$

$c = C$

$d = D$

$\Rightarrow p(x) = q(x)$