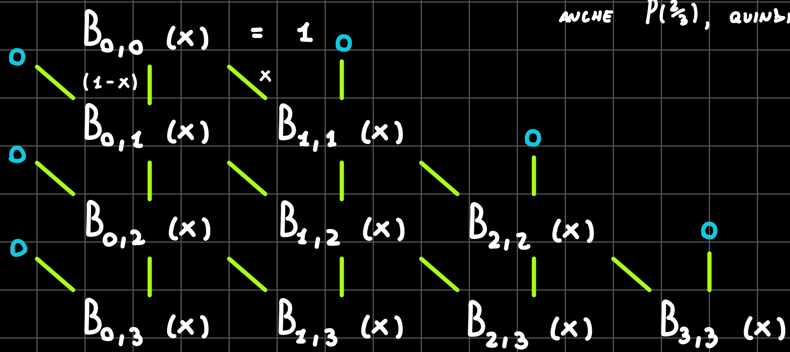
Esempio: $p(x) = 2B_{0,3}(x) + 0B_{1,3}(x) + 2B_{2,3} + 0B_{3,3}$ $\quad x \in [0, 1]$

Punti di valutazione: $[0, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, 1]$

$$\text{Matrice } B = \begin{array}{c} \\ 0 \\ \frac{1}{3} \\ \frac{1}{2} \\ \frac{2}{3} \\ 1 \end{array} \begin{array}{c} \begin{array}{cccc} B_{0,3} & B_{1,3} & B_{2,3} & B_{3,3} \end{array} \\ \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{8}{27} & \frac{12}{27} & \frac{6}{27} & \frac{1}{27} \\ \frac{1}{8} & \frac{3}{8} & \frac{3}{8} & \frac{1}{8} \\ \frac{1}{27} & \frac{6}{27} & \frac{12}{27} & \frac{8}{27} \\ 0 & 0 & 0 & 1 \end{bmatrix} \end{array}$$

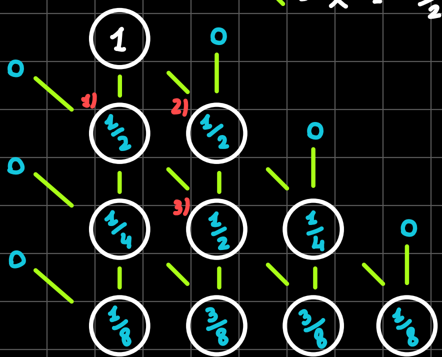
Nota: Se ho già calcolato $P(\frac{1}{3})$ per simmetria conosco già anche $P(\frac{2}{3})$, quindi è gratis!

Schema:

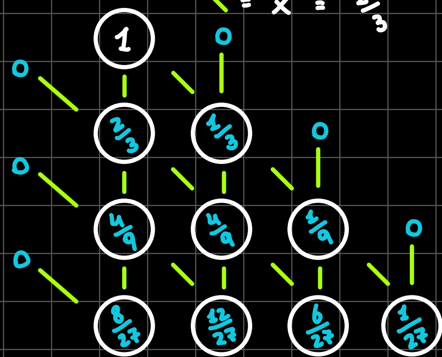


***Nota**: $p(0) = \sum_{i=0}^{3} b_i B_{i,3}(0) = b_0 \underbrace{B_{0,3}(0)}_{=1} = b_0$

1) $x = \frac{1}{2}$ $\quad | = (1-x) = (1-\frac{1}{2}) = \frac{1}{2}$ $\quad \backslash = x = \frac{1}{2}$



2) $x = \frac{1}{3}$ $\quad | = (1-x) = (1-\frac{1}{3}) = \frac{2}{3}$ $\quad \backslash = x = \frac{1}{3}$



1) $\frac{1}{2} \cdot 0 + \frac{1}{2} \cdot 1 = \frac{1}{2}$

2) $\frac{1}{2} \cdot 1 + \frac{1}{2} \cdot 0 = \frac{1}{2}$

3) $\frac{1}{2} \cdot \frac{1}{2} + \frac{1}{2} \cdot \frac{1}{2} = \frac{\cancel{2}^{\,1}}{\cancel{4}_{\,2}}$

$$\begin{bmatrix} P(0) \\ P(\frac{1}{3}) \\ P(\frac{1}{2}) \\ P(\frac{2}{3}) \\ P(1) \end{bmatrix} \equiv \begin{array}{c} \begin{array}{cccc} B_{0,3} & B_{1,3} & B_{2,3} & B_{3,3} \end{array} \\ \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{8}{27} & \frac{12}{27} & \frac{6}{27} & \frac{1}{27} \\ \frac{1}{8} & \frac{3}{8} & \frac{3}{8} & \frac{1}{8} \\ \frac{1}{27} & \frac{6}{27} & \frac{12}{27} & \frac{8}{27} \\ 0 & 0 & 0 & 1 \end{bmatrix} \end{array} \cdot \begin{bmatrix} 2 \\ 0 \\ 2 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} P(0) \\ P(\frac{1}{3}) \\ P(\frac{1}{2}) \\ P(\frac{2}{3}) \\ P(1) \end{bmatrix} \equiv \sum_{i=0}^{3} b_i B_{i,3}(x)$$