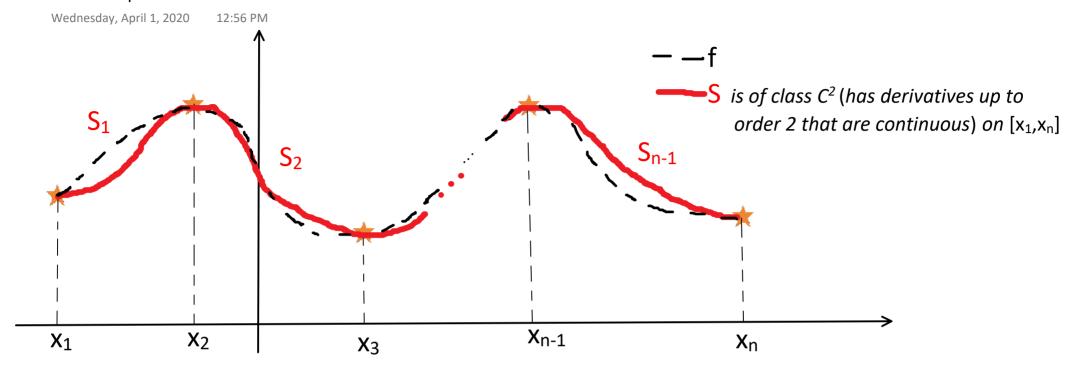$S_i$=polynomial of degree$\leq 3 \rightarrow$ cubic spline

$S_i(x)=a_i+b_i(x-x_i)+c_i(x-x_i)^2+d_i(x-x_i)^3$, i=1,…,n-1, $x\in[x_i,x_{i+1}]$

$S_i(x_i)=f(x_i)$, $S_i(x_{i+1})=f(x_{i+1})$, i=1,…,n-1

$S_{i-1}'(x_i)=S_i'(x_i)$, $S_{i-1}''(x_i)=S_i''(x_i)$, i=2,…,n-1

Number of unknown coefficients: 4(n-1)=4n-4

Number of conditions(equations): 2(n-1)+2(n-2)=4n-6

We need <u>two more</u> conditions(equations), which give the type of the cubic spline.