



$$\begin{aligned}
 f(x) &\sim P(x) \\
 \int_a^b f(x) dx &\sim \int_a^b P(x) dx \\
 &= \frac{1}{2} [f(a) + f(b)]
 \end{aligned}$$

$$f(x) \quad t \in (0, 1)$$

$$\int_0^1 f(x) dx$$

Interpolante F $x_0=0$ $x_1=1$

$$f(x) \Rightarrow f(0) = f(0) \quad f'(0) = f'(0) \quad f(1) = f(1)$$

$$P(x) \Rightarrow P(0) = f(0) \quad P'(0) = f'(0) \quad P(1) = f(1)$$

$$P'(0) = f'(0) \quad P'(1) = f'(1)$$

$$P(x) = L_{00}(x)f(0) + L_{01}(x)f'(0) + L_{10}(x)f(1) +$$

$$+ L_{11}(x)f'(1) + L_{10}(x)f(0) + L_{11}(x)f'(1)$$

$$f(x) \quad t \in (0, 1)$$

$$\int_0^1 f(x) dx$$

Integrand F $x=0$ $x_1=1$

$$f(x) \quad f(0) \quad f(1) \quad f'(0) \quad f'(1)$$

$$P(x) \Rightarrow P(0) = f(0) \quad P(1) = f(1)$$

$$P'(0) = f'(0) \quad P'(1) = f'(1)$$

$$P(x) = L_{00}(x)f(0) + L_{11}(x)f(1) + L_{01}(x)f'(0) + L_{10}(x)f'(1)$$

$$L_{00}(0) = 1 \quad L_{00}(1) = 0$$

$$L_{00}'(0) = 0 \quad L_{00}'(1) = 0$$

$$f(x) \quad x \in (0, 1)$$

$$\int_0^1 f(x) dx = \int_0^1 p(x) dx =$$

Integrand F $x=0$ $x=1$

$$f(x) = f(0) \quad f(1) \quad f'(0) \quad f'(1)$$

$$p(x) = p(0) = f(0) \quad p(1) = f(1)$$

$$p'(x) = p'(0) = f'(0) \quad p'(1) = f'(1)$$

$$p(x) = \int_0^x f(t) dt + \int_x^1 f(t) dt +$$

$$+ \int_0^x f'(t) dt + \int_x^1 f'(t) dt$$

$$\int_0^1 p(x) dx = 0$$

$$\int_0^1 p(x) dx = 0 \quad \int_0^1 p'(x) dx = 0$$

$$\int_a^b uv' = uv - \int_a^b u'v$$

$$v' \rightarrow v + k$$

$$uv \Big|_a^b$$

$$+ \int_a^b u'v - \int_a^b u'(v+k)$$

$$+ \int_a^b u'v - \int_a^b u'v - \int_a^b u'k$$

$$- \int_a^b u'k$$

$$- \int_a^b u'v dx$$

$$B'_{n+1}(t) = n B_n(t)$$

$$\Psi_n(s) = (-1)^n B_n(1-s) = \mathcal{F}_n(s)$$

$$\Psi_{n+1}(s) = (-1)^{n+1} B_{n+1}(1-s)$$

$$\underline{\Psi'_{n+1}(s)} = -(-1)^{n+1} B'_{n+1}(1-s)$$

$$= (-1)^n n B_n(1-s) = \underline{n \Psi_n(s)}$$

$$\frac{0}{1/2} \quad \psi$$