

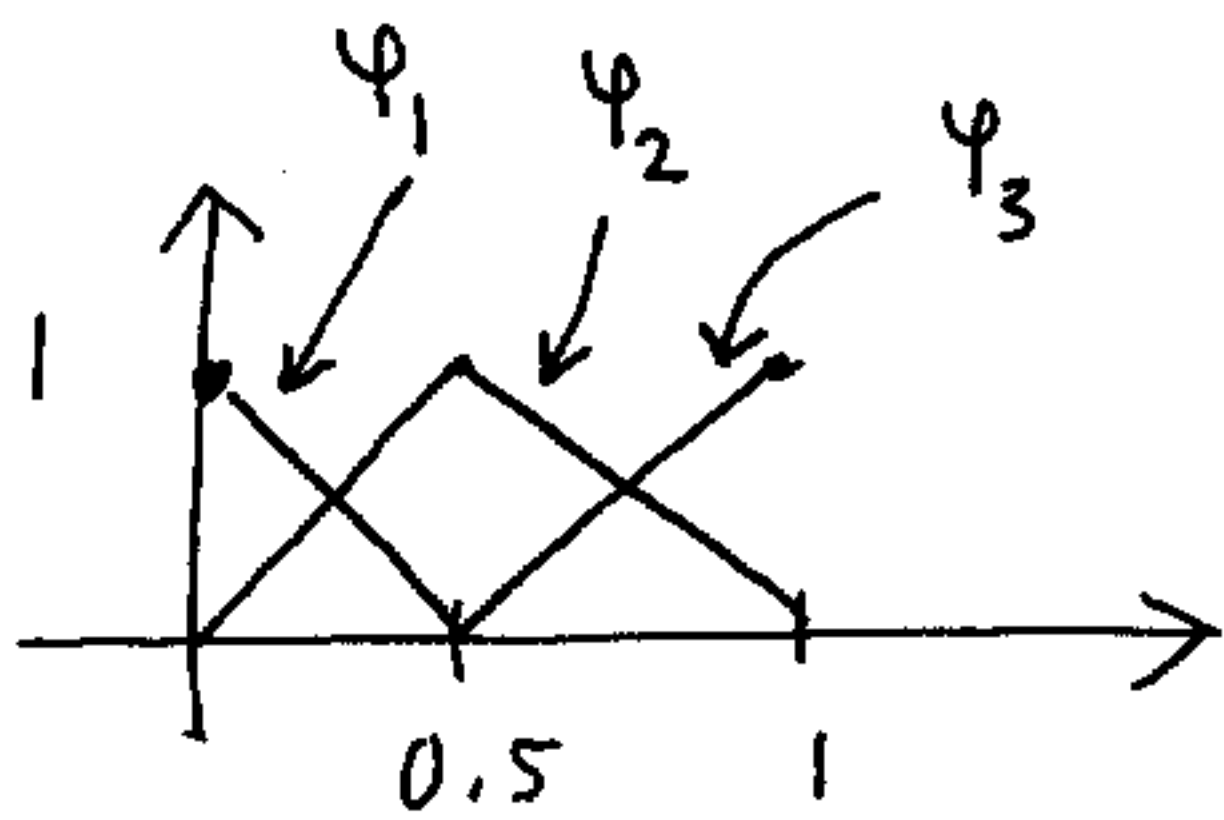
(h) Ansatz $u_h(x) = \sum_{i=1}^3 c_i \varphi_i(x)$ over
 wähl $N = \varphi_j(x)$, $j=1,2,3$ i (1).

Ni für

$$\int_{I_h} P_h u v dx = \int_I u v dx$$

$$\sum_{i=1}^3 c_i \int_I \varphi_i(x) \varphi_j(x) dx = \int_I u(x) \varphi_j(x) dx, \quad j=1,2,3$$

S_{ij} b_j



$$S_{11} = \int_0^1 \varphi_1 \varphi_1 dx = \frac{1}{6} \approx 0.1667$$

$$S_{12} = \int_0^1 \varphi_1 \varphi_2 dx = \frac{1}{12} \approx 0.0833$$

$$S_{21} = S_{12} = 0.0833$$

$$S_{31} = S_{13} = 0$$

$$S_{22} = \int_0^1 \varphi_2 \varphi_2 dx = 2 S_{11} \approx 0.3333$$

$$S_{23} = S_{32} = S_{21} = S_{12} = 0.0833$$

$$S_{33} = S_{11} = 0.1667$$

$$b_1 = \int_0^1 u(x) \varphi_1 dx \approx 0.0729$$

$$b_2 \approx 0.3542$$

$$b_3 \approx 0.2396$$