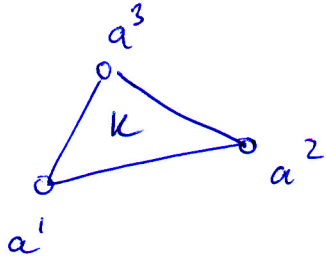


For  $k \in \text{supp}(\phi_i) \cap \text{supp}(\phi_j)$ ;  $N_i, N_j$  ⑥  
 are nodes of  $k$ .



Introduce local numbering of the nodes  $a^1, a^2, a^3$  with corresponding element basis functions  $\lambda^1, \lambda^2, \lambda^3$

Element stiffness matrix  $A_{ij}^k = (\nabla \lambda_j, \nabla \lambda_i)_k$   
 (3x3)

with  $i, j = 1, 2, 3$   $= \int_k \nabla \lambda_j \cdot \nabla \lambda_i \, dx$

local to global index:  $I_{\#}^k(\text{local index on } k) =$   
 $N_i = I_{\#}^k(a_j)$  global nodal number

Assembly algorithm: to compute global matrix  $A$

For all elements  $k \in \mathcal{T}_h$

Compute element stiffness matrix  $A_{ij}^k$

For  $i, j = 1, 2, 3$

Add contribution to global matrix

$$a_{I(i)I(j)}^k += A_{ij}^k$$

end

end