1 Versió 1 (la més recent)

Pregunta 1

Resposta desada

Puntuat sobre 10,00

Consider the Poisson heat difussion on the square of side length $l = 3$ shown below, meshed by four rectangular triangular finite elements with the local and global numbering plotted there. We consider that the thermal conductivity is $k_c = 1$ and the internal heating is $f = 2$. Also suppose that the temperature is $T = 0$ on the side determined by the nodes 1 and 4; $q_n = 0$, on the sides between nodes 1 and 2, and 3 and 4; and on the edge between nodes 2 and 3, the BC is $\frac{\partial T}{\partial x} = -T$. (you can also formulate this BC as a convection problem for suitables β and T_∞) Answer the following questions :

(a) (3 points) The value of F_5 of the global vector forces is

- 14
- 16
- 6
- 4
- Leave it empty (no penalty)

Hint1: The value of the entry K_{54} of the global stiffness matrix K is -1.0000e+00

(b) (3 points) One knows that $Q_2 = c_2 T_2 + c_3 T_3$ for some c_2 and c_3 . Then, the value of c_2 is :

- -1
- -4/3
- -2/3
- -2
- Leave it empty (no penalty)

Hint2: this coefficient for $Q_2 + Q_3$ is -1.5000e+00

(c) (4 points) The temperature of node 5, T_5, is :

- 3
- 21/8
- 2
- Leave it empty (no penalty)
- 32/5

Hint3: $T_2 - T_3$ is 0

Torna a començar | Desa | Emplena amb les respostes correctes | Envia i acaba | Tanca la previsualització

Comentaris

Expandeix-ho tot

Opcions de previsualització

Opcions de visualització

Informació tècnica

Camps personalitzats de preguntes

Download this question in Moodle XML format