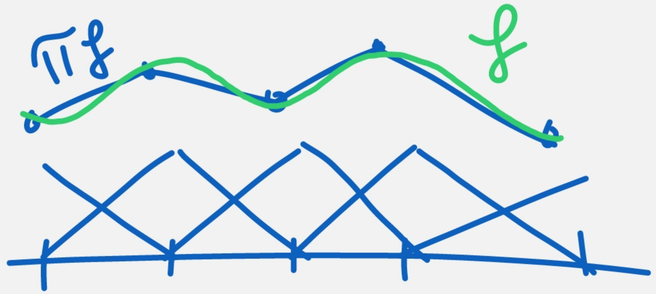
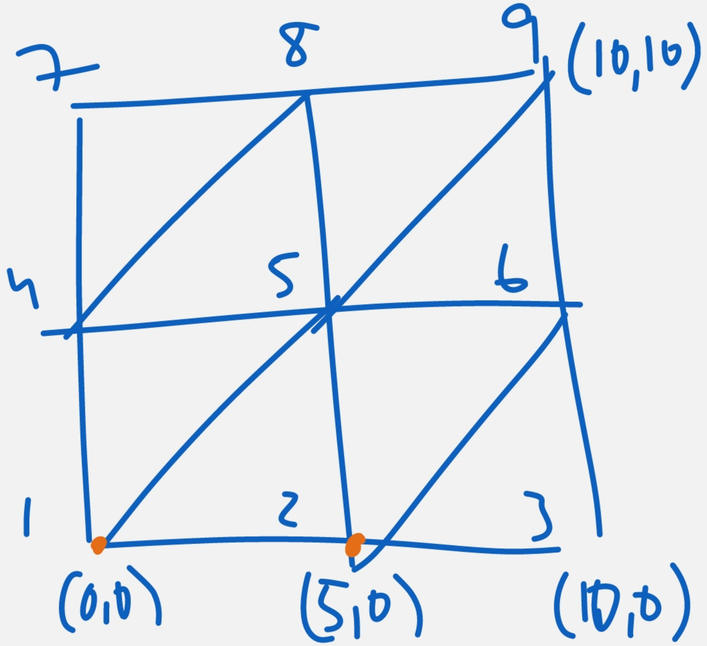
Demo



Tenta 2023-05-29

A.9



$$f(x,y) = x - y$$

$$\pi_h f(x,y) = \sum_{i=1}^{9} F_i \varphi_i(x,y)$$

$$F = [0, 5, 10, -5, 0, 5, -10, -5, 0]$$

$$\|F\|^2 = \sum F_i^2 = 25 + 100 + 25 + 25 + 100 + 25 = 300$$

2021-05-25

A.11

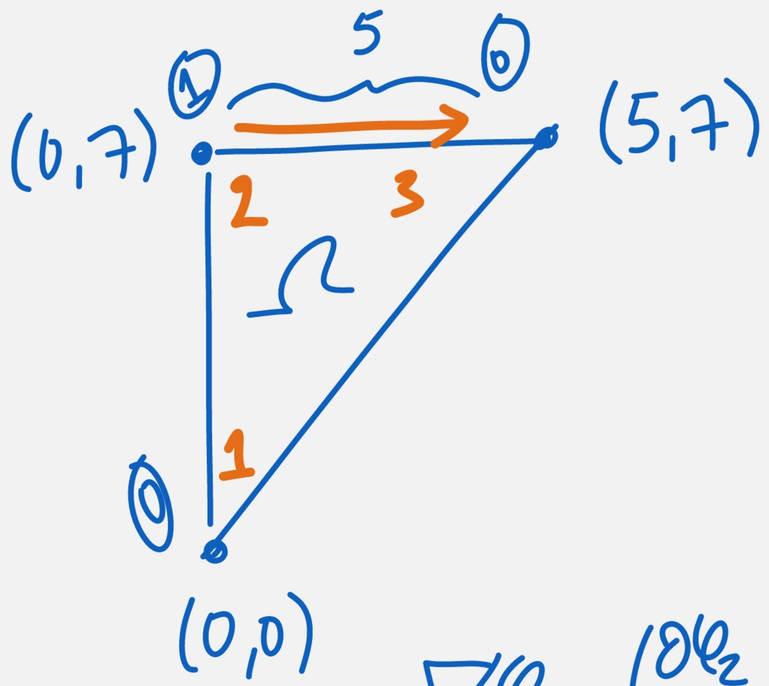
$$F_K(x,y) = (1-x-y)\begin{bmatrix}1\\2\end{bmatrix} + x\begin{bmatrix}2\\3\end{bmatrix} + y\begin{bmatrix}2\\1\end{bmatrix}$$

$$= \begin{bmatrix}1-x-y+2x+2y\\2-2x-2y+3x+y\end{bmatrix} = \begin{bmatrix}1+x+y\\2+x-y\end{bmatrix}$$

$$\Rightarrow F_K' = \begin{bmatrix}1 & 1\\1 & -1\end{bmatrix} \Rightarrow \det F_K' = 1\cdot(-1) - 1\cdot 1 = -1-1 = -2$$

2022-10-07

C. 2 Styvhetsmatris (för Poissons ekvation)



$$A_{ij} = \int_\Omega \nabla\varphi_i \cdot \nabla\varphi_j \, dx$$

$$A_{23} = \int_\Omega \nabla\varphi_2 \cdot \nabla\varphi_3 \, dx = \int_\Omega \frac{-1}{25} \, dx = \frac{-1}{25_5} \cdot \frac{5 \cdot 7}{2} = \frac{-7}{10} = -0.7$$

$$\nabla\varphi_2 = \left(\frac{\partial\varphi_2}{\partial x}, \frac{\partial\varphi_2}{\partial y}\right) = \left(\frac{-1}{5}, \frac{1}{7}\right) \qquad \nabla\varphi_3 = \left(\frac{1}{5}, 0\right)$$