Poznámka ke cvičení č. 9

Geometrická matice

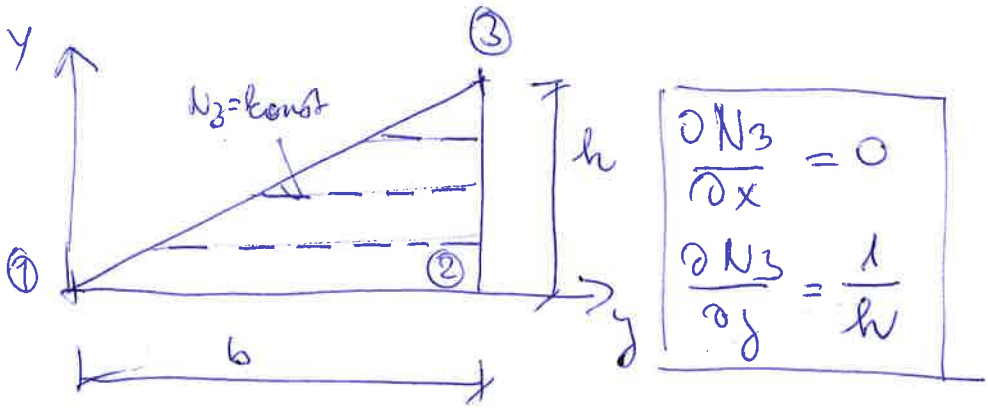
$$B = \frac{1}{2A}\begin{bmatrix} y_{23} & 0 & y_{31} & 0 & y_{12} & 0 \\ 0 & x_{32} & 0 & x_{13} & 0 & x_{21} \\ x_{32} & y_{23} & x_{13} & y_{31} & x_{21} & y_{12} \end{bmatrix}$$

$$= \begin{bmatrix} \frac{\partial N_1}{\partial x} & 0 & \frac{\partial N_2}{\partial x} & 0 & \frac{\partial N_3}{\partial x} & 0 \\ 0 & \frac{\partial N_1}{\partial y} & 0 & \frac{\partial N_2}{\partial y} & 0 & \frac{\partial N_3}{\partial y} \\ \frac{\partial N_1}{\partial y} & \frac{\partial N_1}{\partial x} & \frac{\partial N_2}{\partial y} & \frac{\partial N_2}{\partial x} & \frac{\partial N_3}{\partial y} & \frac{\partial N_3}{\partial x} \end{bmatrix}$$

$$\Rightarrow \frac{\partial N_3}{\partial y} = \frac{x_{21}}{2A}$$

$$\frac{\partial N_3}{\partial x} = \frac{y_{12}}{2A}$$

Průřez:



$$\boxed{\frac{\partial N_3}{\partial x} = 0}$$

$$\boxed{\frac{\partial N_3}{\partial y} = \frac{1}{h}}$$

Ze vztahů pro B plyne

$$\boxed{\frac{\partial N_3}{\partial x} = \frac{y_{12}}{2A} = 0}$$

$$\boxed{\frac{\partial N_3}{\partial y} = \frac{x_{21}}{2A} = \frac{x_2 - x_1}{(x_2 - x_1)(y_3 - y_2)\frac{1}{2}\cdot 2} = \frac{1}{y_3 - y_2} = \frac{1}{h}}$$