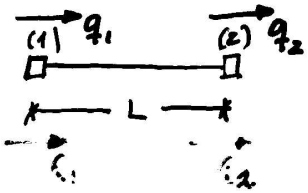
ELEMENTO FINITO DE BARRA

- DEFINIÇÃO DA APROXIMAÇÃO DO CAMPO DE DESLOCAMENTOS



$$u(x) = \quad + \quad$$

$$u(x) = \psi_1(x)\, q_1 + \psi_2(x)\, q_2$$

$$= \left(1 - \frac{x}{L}\right) q_1 + \left(\frac{x}{L}\right) q_2$$

$$[u(x)] = \begin{bmatrix} \left(1-\frac{x}{L}\right) & \left(\frac{x}{L}\right) \end{bmatrix} \begin{bmatrix} q_1 \\ q_2 \end{bmatrix}$$

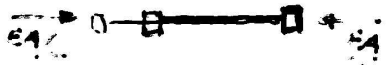
$$\underline{u}(\underline{x}) = \underline{\psi}(\underline{x})\, \underline{q}$$

$\underline{\psi}(\underline{x})$ — MATRIZ DAS FUNÇÕES DE INTERPOLAÇÃO

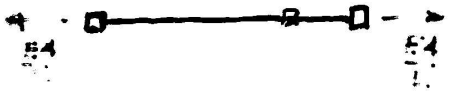
$\underline{u}^e \equiv \underline{q}$

- DEFINIÇÃO DA MATRIZ DE RIGIDEZ ELEMENTAR ("TABELAS" DA SOLUÇÃO COMPLEMENTAR)

$q_1 = 1$; $q_2 = 0$



$q_2 = 1.0$; $q_1 = 0$



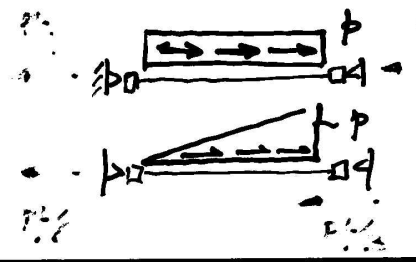
$$K^e = \begin{bmatrix} \frac{EA}{L} & -\frac{EA}{L} \\ -\frac{EA}{L} & \frac{EA}{L} \end{bmatrix}$$

$q_1 = 1.0$ $\quad$ $q_2 = 1.0$

$q_2 = 0.0$ $\quad$ $q_1 = 0.0$

- DEFINIÇÃO DO VECTOR DAS FORÇAS DE FIXAÇÃO ("TABELAS" DA SOLUÇÃO PARTICULAR)

$q_1 = q_2 = 0.0$



$$f^e = \begin{bmatrix} -\frac{pL}{2} \\ -\frac{pL}{2} \end{bmatrix}$$

$$f^e = \begin{bmatrix} -\frac{pL}{3} \\ -\frac{pL}{6} \end{bmatrix}$$