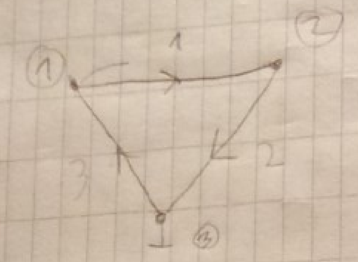
5.

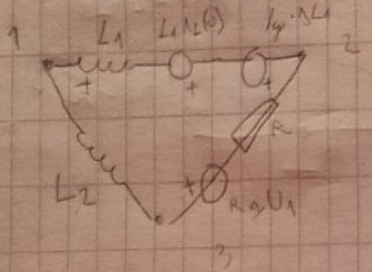


$$A_a = \begin{bmatrix} 1 & 0 & -1 \\ -1 & 1 & 0 \\ 0 & -1 & 1 \end{bmatrix}$$

$$S = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix} \qquad U_1 =$$

6.

$$U_b = Z_b I_b + U_{0b}$$



$$U_1 = I_1 sL_1 - L_1 i_L(0) - I_g sL_1$$

$$U_2 = I_2 R + R_g sL_1 I_1 + R_g(L_1 i_L(0) + I_g$$

$$U_3 = I_3 L_2 s$$

$$\begin{bmatrix} U_1 \\ U_2 \\ U_3 \end{bmatrix} = \begin{bmatrix} sL_1 & 0 & 0 \\ +R_g sL_1 & R & 0 \\ 0 & 0 & L_2 s \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix} + \begin{bmatrix} -L_1 i_L(0) - I_g sL_1 \\ R_g(L_1 i_L(0) + I_g sL_1) \\ 0 \end{bmatrix}$$

$$Z_p = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} sL_1 & 0 & 0 \\ +R_g sL_1 & R & 0 \\ 0 & 0 & L_2 s \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} = \begin{bmatrix} (sL_1 + R_g sL_1) & R & L_2 s \end{bmatrix} \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$$

$$= \begin{bmatrix} sL_1 + R_g sL_1 + R + L_2 s \end{bmatrix}$$

$$U_{ep} = -\begin{bmatrix} 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} -L_1 i_1(0) - I_g sL_1 \\ R_g(L_1 i_L(0) - I_g sL_1) \\ 0 \end{bmatrix} = [L_1 i_1(0) + I_g sL_1 - R_g(L_1 i_L(0) - I_g sL_1)]$$