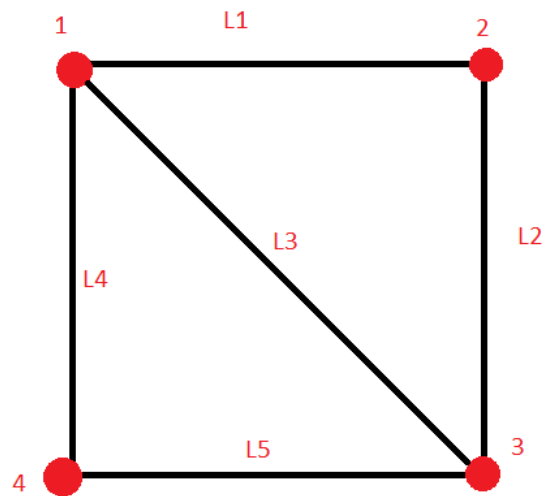


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Sieć 4-węzłowa



Nazwa	Z	Do	r'	x'	b' [uS]	długość	opis
L1	1	2	0.06	0.4	3	100	S24-6-240-110kV
L2	2	3	0.06	0.35	2.5	100	S24-6-240-110kV
L3	1	3	0.06	0.37	3	100	S24-6-240-110kV
L4	1	4	0.06	0.4	3	200	S24-6-240-110kV
L5	3	4	0.06	0.4	2.4	50	S24-6-240-110kV

$$Z_{L1} = (0,06 + 0,4j) * 100 = 6 + 40j,$$

$$B_{L1} = 3 * 10^{-6} * 100 = 3 * 10^{-4}$$

$$Z_{L2} = (0,06 + 0,35j) * 100 = 6 + 35j,$$

$$B_{L2} = 2,5 * 10^{-6} * 100 = 2,5 * 10^{-4}$$

$$Z_{L3} = (0,06 + 0,37j) * 100 = 6 + 37j,$$

$$B_{L3} = 3 * 10^{-6} * 100 = 3 * 10^{-4}$$

$$Z_{L4} = (0,06 + 0,4j) * 200 = 12 + 80j,$$

$$B_{L4} = 3 * 10^{-6} * 200 = 6 * 10^{-4}$$

$$Z_{L5} = (0,06 + 0,4j) * 50 = 3 + 20j,$$

$$B_{L5} = 3 * 10^{-6} * 50 = 1,5 * 10^{-4}$$

$$\begin{bmatrix} y_{L1} + y_{L3} + y_{l4} + j * \frac{B_{L1} + B_{L3} + B_{L4}}{2} & -y_{l1} & -y_{l3} & -y_{l4} \\ -y_{l1} & y_{L1} + y_{L2} + j * \frac{B_{L1} + B_{L2}}{2} & -y_{L2} & 0 \\ -y_{l3} & -y_{L2} & y_{L2} + y_{L3} + y_{L5} + j * \frac{B_{L2} + B_{L3} + B_{L5}}{2} & -y_{L5} \\ -y_{l4} & 0 & -y_{L5} & y_{L5} + y_{L4} + j * \frac{B_{L4} + B_{L5}}{2} \end{bmatrix}$$

Y =

$$\begin{bmatrix} 0.0098 - 0.0624i & -0.0037 + 0.0244i & -0.0043 + 0.0263i & -0.0018 + 0.0122i \\ -0.0037 + 0.0244i & 0.0084 - 0.0519i & -0.0048 + 0.0278i & 0.0000 + 0.0000i \\ -0.0043 + 0.0263i & -0.0048 + 0.0278i & 0.0164 - 0.1026i & -0.0073 + 0.0489i \\ -0.0018 + 0.0122i & 0.0000 + 0.0000i & -0.0073 + 0.0489i & 0.0092 - 0.0607i \end{bmatrix}$$