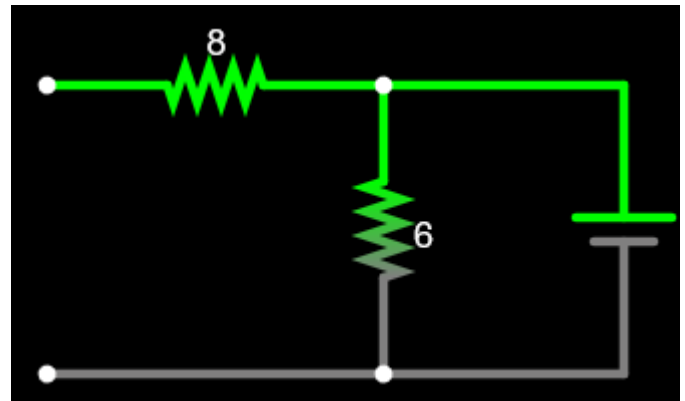
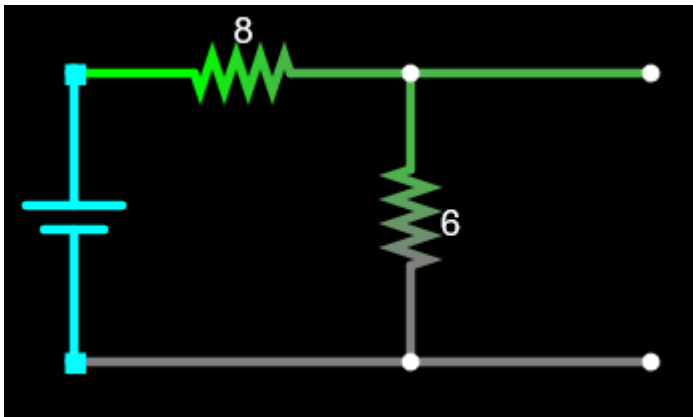
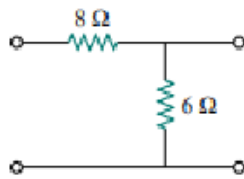


1. Considere o circuito indicado na figura abaixo. Calcule os parâmetros da matriz Z



$$Z_{11} = \frac{V_1}{I_1} |_{I_2=0}$$

$$V_1 = I_1 8\Omega + I_1 6\Omega$$

$$V_1 = I_1 (8\Omega + 6\Omega)$$

$$\frac{V_1}{I_1} = (8\Omega + 6\Omega)$$

$$\frac{V_1}{I_1} = 14\Omega$$

$$Z_{21} = \frac{V_2}{I_1} |_{I_2=0}$$

$$V_1 = I_1 14\Omega$$

$$V_2 = \frac{6\Omega}{(8+6)\Omega} V_1$$

$$V_2 = \frac{6\Omega}{(14)\Omega} I_1 14\Omega$$

$$\frac{V_2}{I_1} = 6\Omega$$

$$Z_{12} = \frac{V_1}{I_2} |_{I_1=0}$$

$$V_1 = V_2$$

$$V_2 = 6\Omega I_2$$

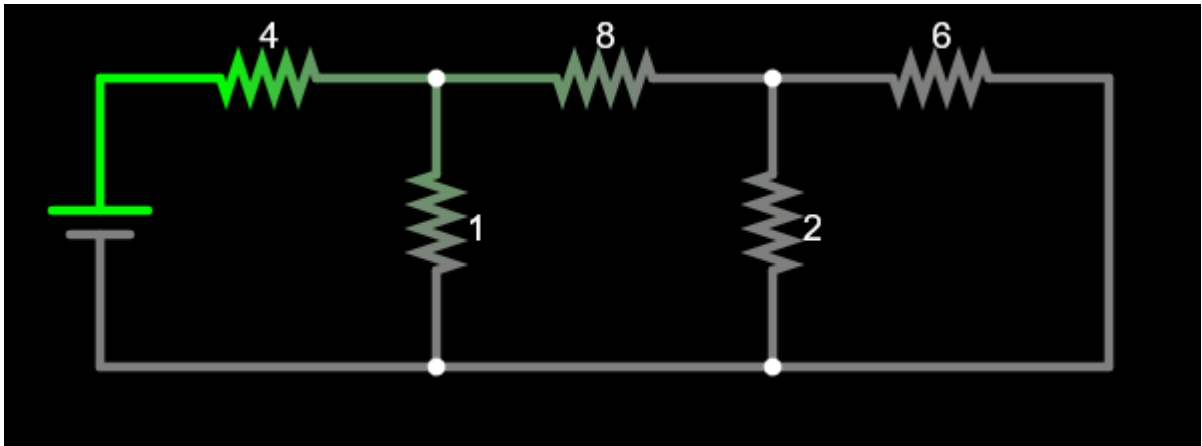
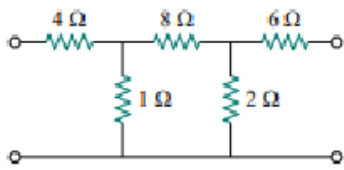
$$\frac{V_1}{I_2} = 6\Omega$$

$$Z_{22} = \frac{V_2}{I_2} |_{I_1=0}$$

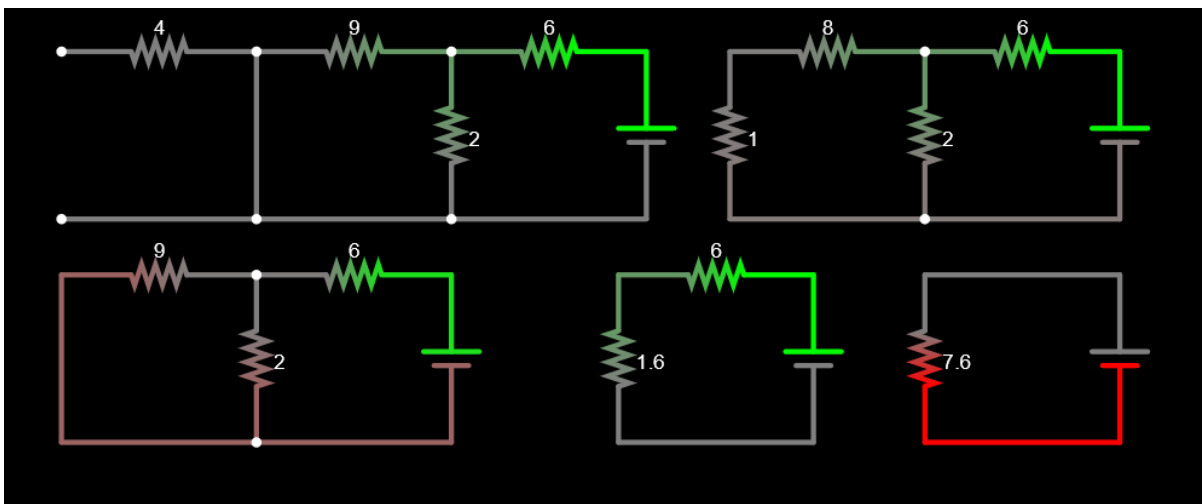
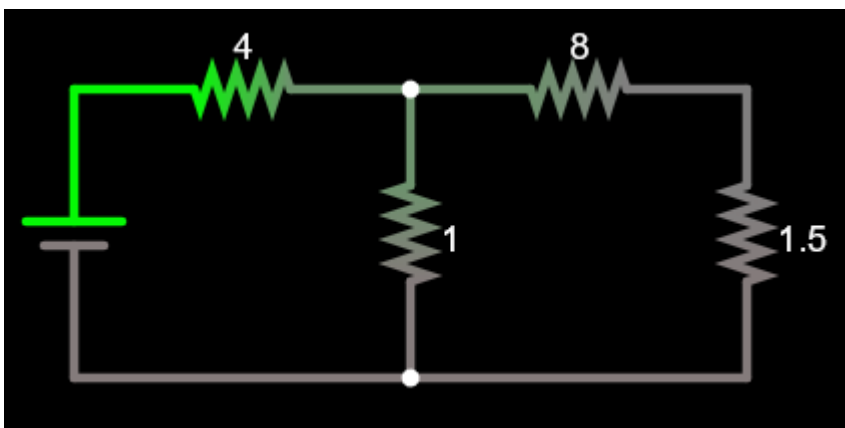
$$V_2 = 6\Omega I_2$$

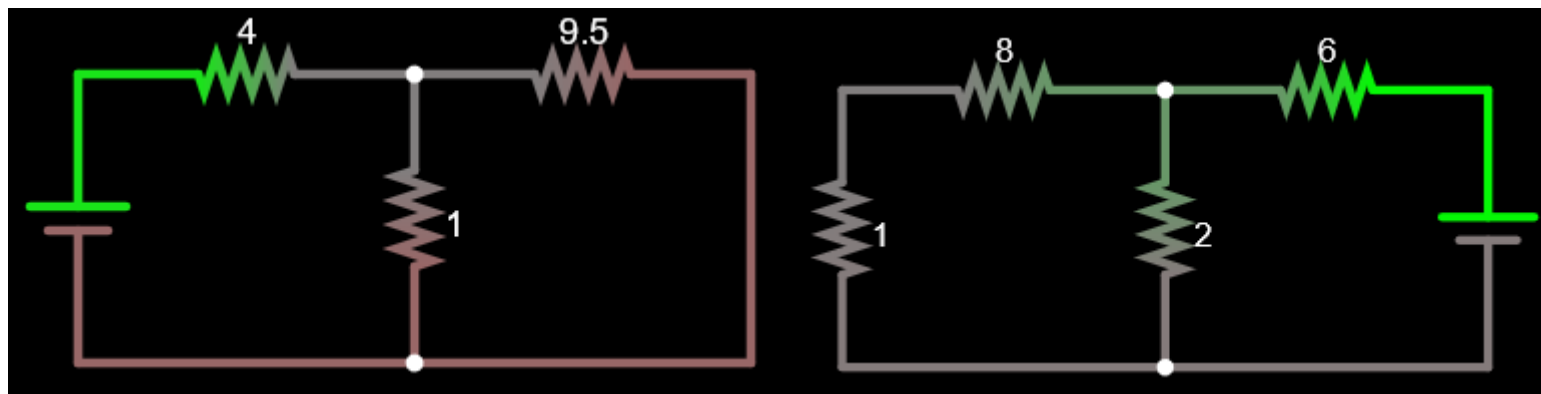
$$\frac{V_2}{I_2} = 6\Omega$$

2. Considere o circuito indicado na figura abaixo. Calcule os parâmetros da matriz h



$$\left(\frac{1}{2} + \frac{1}{6}\right)^{-1} = 1.5\Omega$$





$$h_{11} = \frac{V_1}{I_1} |_{V_2=0}$$

$$V_1 = I_1(4 + 1 || 9.5)\Omega$$

$$V_1 = I_1(4.904)\Omega$$

$$\frac{V_1}{I_1} = 4.904\Omega$$

$$h_{21} = \frac{V_1}{V_2} |_{I_1=0}$$

$$I_\alpha = I_2 \frac{\frac{1}{2}}{\frac{1}{2} + \frac{1}{9}}$$

$$\frac{I_\alpha}{I_2} = 0.8181$$

$$\frac{I_\beta}{I_2} = 1 - 0.8181$$

$$I_\alpha = I_2 0.1818$$

$$V_1 = I_\beta(8)\Omega$$

$$V_1 = I_2 * 0.1818 * (1)\Omega$$

$$V_2 = I_2 * 0.8181 * (2)\Omega$$

$$\frac{V_1}{V_2} = 0.1111$$

$$h_{21} = \frac{I_2}{I_1} |_{V_2=0}$$

$$-I_2 = I_1 \frac{1}{1 + 9.5}$$

$$\frac{I_2}{I_1} = -0.09523$$

$$h_{22} = \frac{I_2}{V_2} |_{I_1=0}$$

$$V_2 = I_2 * 0.8181 * (2)\Omega$$

$$\frac{I_2}{V_2} = \frac{1}{1.6362}$$

$$\frac{I_2}{V_2} = 0.6112S$$

3. Assuma que no circuito 2 liga uma resistência de 10 Ohm nos terminais de saída. Se ligar um gerador  $V_g$  que tem uma resistência interna  $R_g$ . Se  $V_g=5\text{ V}$  e  $R_g= 5\text{ Ohm}$ , qual será a tensão à entrada deste circuito da questão 2?

(ver próxima página)

$$V_{saida} = 5V - I * 5\Omega$$

$$I = \frac{5V}{5 + 4 + 0.9072\Omega}$$

$$I \approx 0.5047A$$

$$V_{saida} = 5V - 0.5047A * 5\Omega$$

$$V_{saida} \approx 2.477V$$

