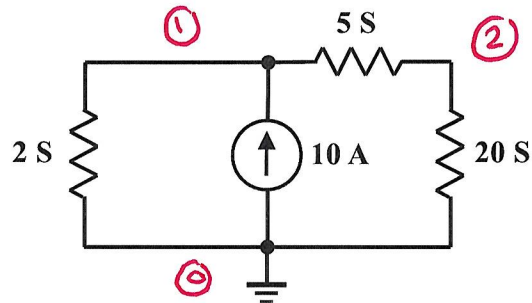


Homework Problem #017

Assign node labels and express the node equations in the matrix form discussed in class.



Do not attempt to solve the equations. Note that component values are given in siemens, not ohms.

$$2V_1 - 10 + 5(V_1 - V_2) = 0 \quad (\text{KCL for node 1})$$

$$5(V_2 - V_1) + 20V_2 = 0 \quad (\text{KCL for node 2})$$

In matrix form:

$$\begin{bmatrix} 2+5 & -5 \\ -5 & 5+20 \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix} = \begin{bmatrix} 10 \\ 0 \end{bmatrix}$$