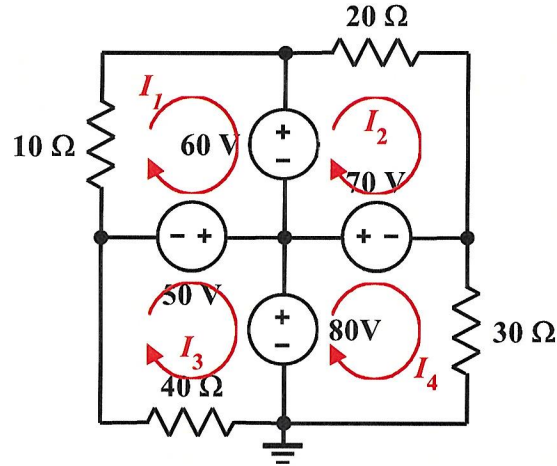


Homework Problem #026

Mesh currents are predefined as shown. Express the corresponding mesh equations in the matrix form discussed in class.



$$\begin{aligned}
 10 I_1 + 60 + 50 &= 0 && \text{(KCL for mesh 1)} \\
 -60 + 20 I_2 - 70 &= 0 && \text{(KCL for mesh 2)} \\
 -50 + 80 + 40 I_3 &= 0 && \text{(KCL for mesh 3)} \\
 -80 + 70 + 30 I_4 &= 0 && \text{(KCL for mesh 4)}
 \end{aligned}$$

In matrix form:

$$\begin{bmatrix} 10 & 0 & 0 & 0 \\ 0 & 20 & 0 & 0 \\ 0 & 0 & 40 & 0 \\ 0 & 0 & 0 & 30 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \\ I_4 \end{bmatrix} = \begin{bmatrix} -60-50 \\ 60+70 \\ 50-80 \\ 80-70 \end{bmatrix} \text{ or } \begin{bmatrix} -110 \\ 130 \\ -30 \\ 10 \end{bmatrix}$$