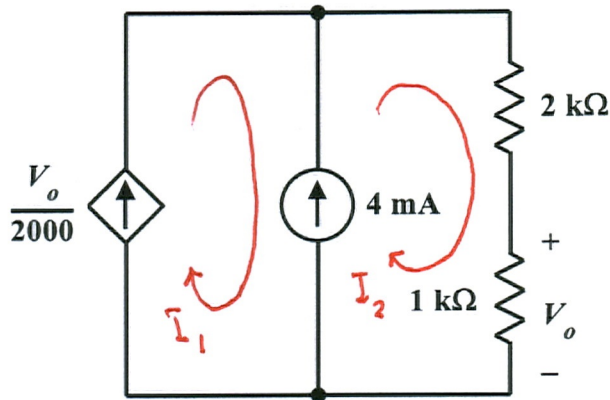


EE/EET 2240  
Homework Problem #20

Use mesh analysis to find  $V_o$  in the circuit shown.



$$I_1 = \frac{V_o}{2000}$$

$$I_2 - I_1 = 4 \text{ mA}$$

$$V_o = (1 \text{ k}\Omega) I_2$$

In matrix form:

$$\begin{bmatrix} 1 & 0 & -1/2000 \\ -1 & 1 & 0 \\ 0 & -1000 & 1 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ V_o \end{bmatrix} = \begin{bmatrix} 0 \\ 0.004 \\ 0 \end{bmatrix}$$

Solving yields:

$$I_1 = 4 \text{ mA}, \quad I_2 = 8 \text{ mA}, \quad V_o = 8 \text{ V}$$