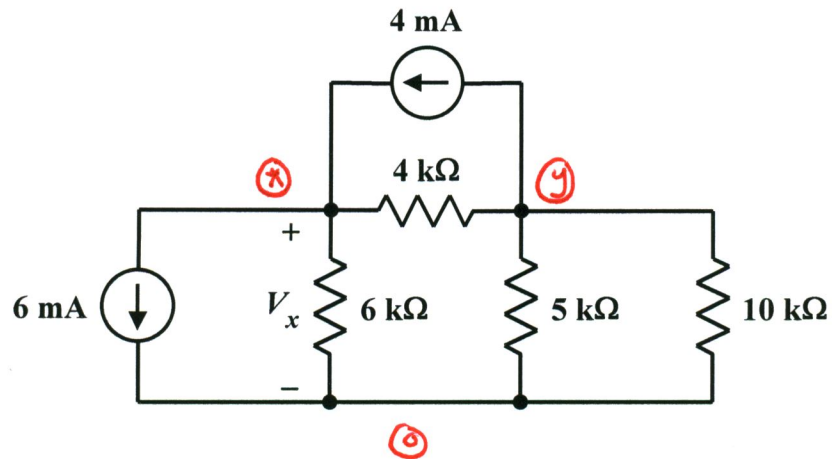


EE 2240
Problem #02

Find V_x using the nodal analysis method.



$$6\text{ mA} + \frac{V_x}{6\text{ k}\Omega} + \frac{V_x - V_y}{4\text{ k}\Omega} - 4\text{ mA} = 0 \quad (\text{KCL at node } x)$$

$$4\text{ mA} + \frac{V_y - V_x}{4\text{ k}\Omega} + \frac{V_y}{5\text{ k}\Omega} + \frac{V_y}{10\text{ k}\Omega} = 0 \quad (\text{KCL at node } y)$$

$$\begin{bmatrix} \frac{1}{2400} & -\frac{1}{4000} \\ -\frac{1}{4000} & \frac{11}{20000} \end{bmatrix} \begin{bmatrix} V_x \\ V_y \end{bmatrix} = \begin{bmatrix} -0.002 \\ -0.004 \end{bmatrix}$$

$$V_x = -12.6\text{ V}$$