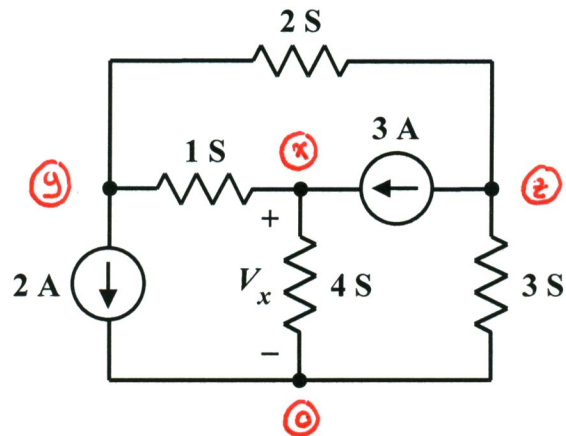


EE 2240
Problem #04

Use the nodal analysis method to determine the voltage, V_x , across the 4-siemens conductance.



$$2A + 1S(V_y - V_x) + 2S(V_y - V_z) = 0 \quad (\text{KCL at node } y)$$

$$1S(V_x - V_y) + 4S V_x - 3A = 0 \quad (\text{KCL at node } x)$$

$$2S(V_z - V_y) + 3A + 3S V_z = 0 \quad (\text{KCL at node } z)$$

$$\begin{bmatrix} -1 & 3 & -2 \\ 5 & -1 & 0 \\ 0 & -2 & 5 \end{bmatrix} \begin{bmatrix} V_x \\ V_y \\ V_z \end{bmatrix} = \begin{bmatrix} -2 \\ 3 \\ -3 \end{bmatrix}$$

$$V_x = 0.34 \text{ V}$$