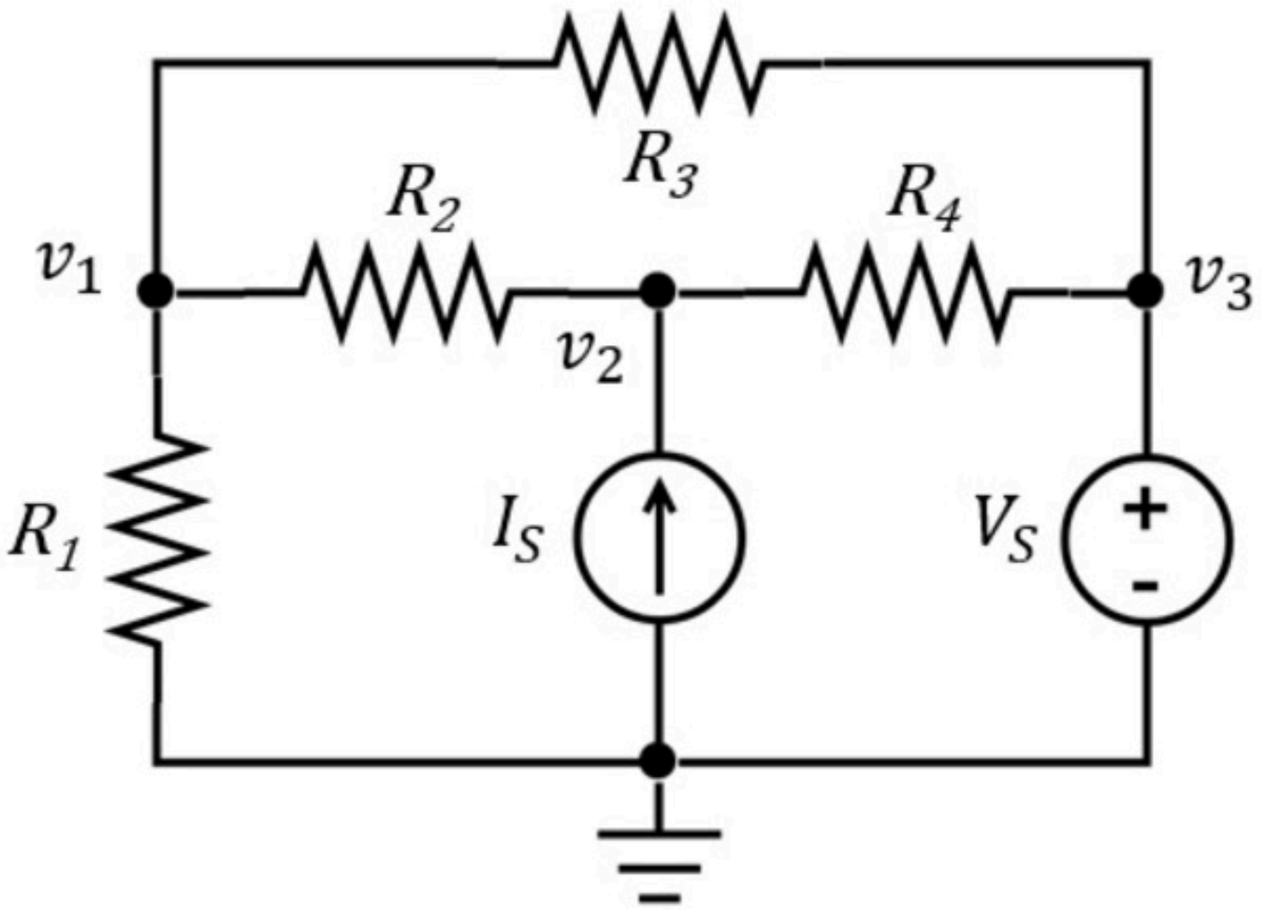
Nodal Mesh 002

Problem has been graded.

Find the node voltages v_1, v_2 and v_3.
Use nodal analysis.



Given Variables:

R1 : 2 ohm

R2 : 1 ohm

R3 : 1 ohm

R4 : 2 ohm

Vs : 5 V

Is : 1 A

Calculate the following:

v1 (V) :

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v2 (V) :

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v3 (V) :

Find the node voltages v_1, v_2 and v_3.
Use nodal analysis.

R1 = 2 Ω

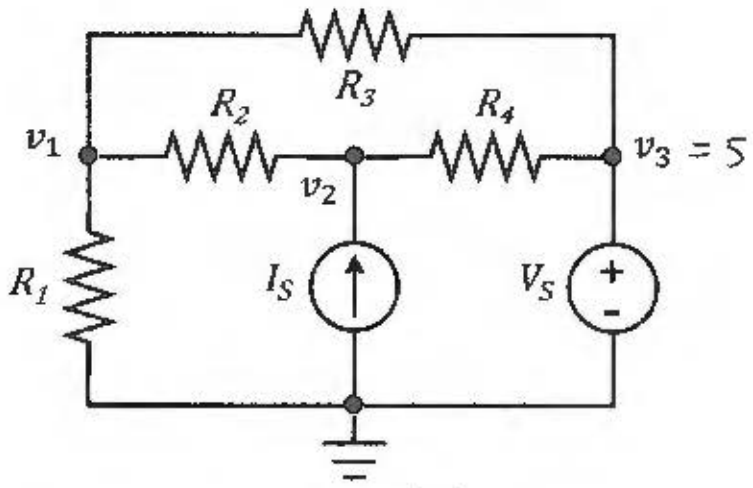
R2 = 1 Ω

R3 = 1 Ω

R4 = 2 Ω

Vs = 5 V

Is = 1 A



$v_3 = V_S \Rightarrow \boxed{v_3 = 5V}$

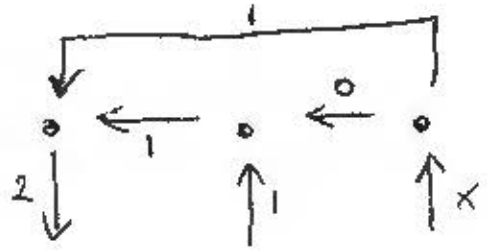
⊗ KCL @ 1 : $\frac{v_1}{2} + \frac{v_1 - 5}{1} + \frac{v_1 - v_2}{1} = 0 \Rightarrow 5v_1 - 2v_2 = 10$ (1)

⊗ KCL @ 2 : $\frac{v_2 - v_1}{1} + \frac{v_2 - 5}{2} - 1 = 0 \Rightarrow -2v_1 + 3v_2 = 7$ (2)

⊗ $3 \times (1) + 2 \times (2)$: $11 v_1 = 44 \Rightarrow \boxed{v_1 = 4V}$

$\boxed{v_2 = 5V}$

CHECK KCL



$x = 1$