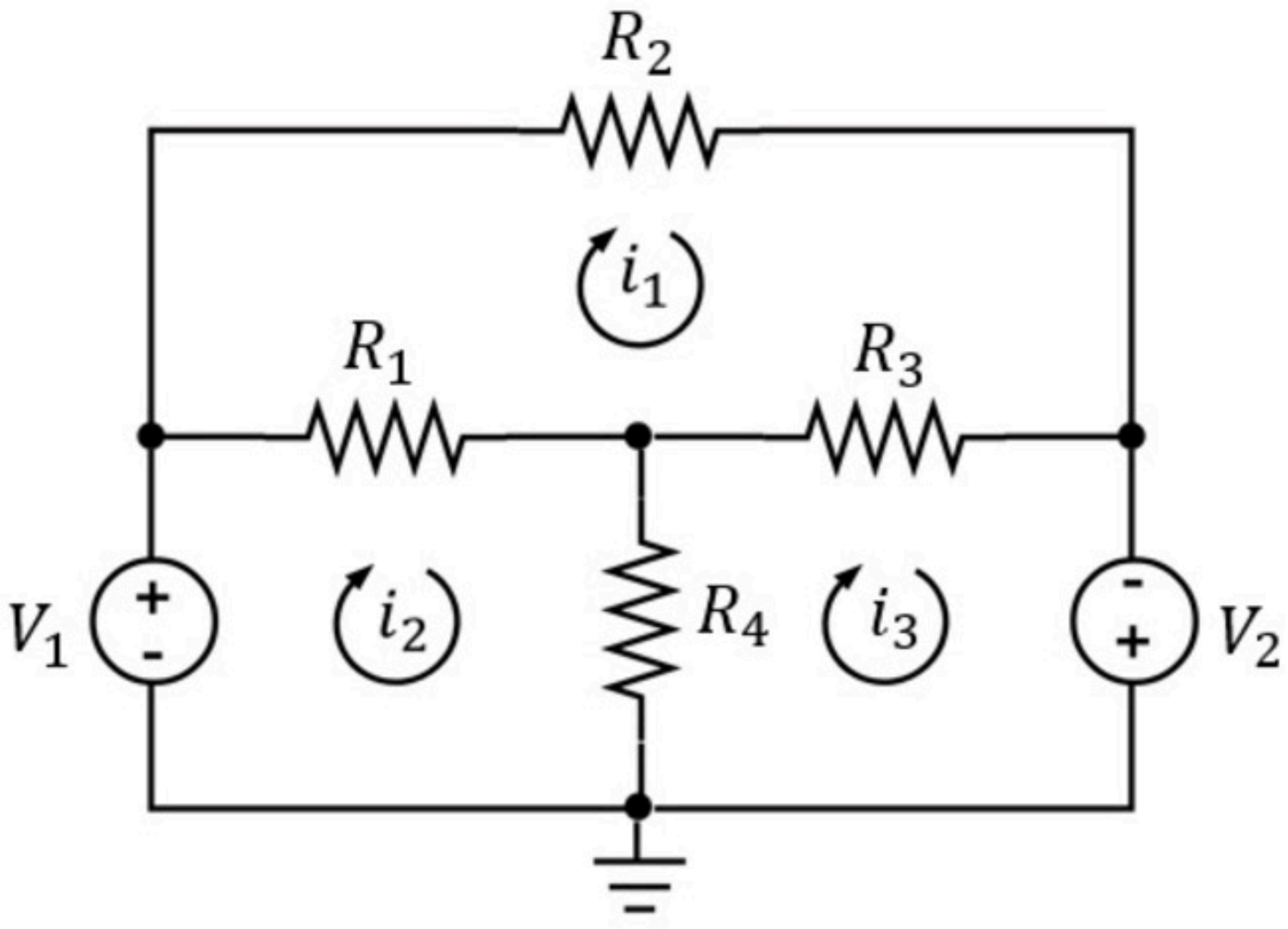
Nodal Mesh 006

Problem has been graded.

Find the mesh currents i_1, i_2, and i_3.



Given Variables:

R1 : 1 ohm

R2 : 1 ohm

R3 : 2 ohm

R4 : 1 ohm

V1 : 4 V

V2 : 3 V

Calculate the following:

i1 (A) :

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i2 (A) :

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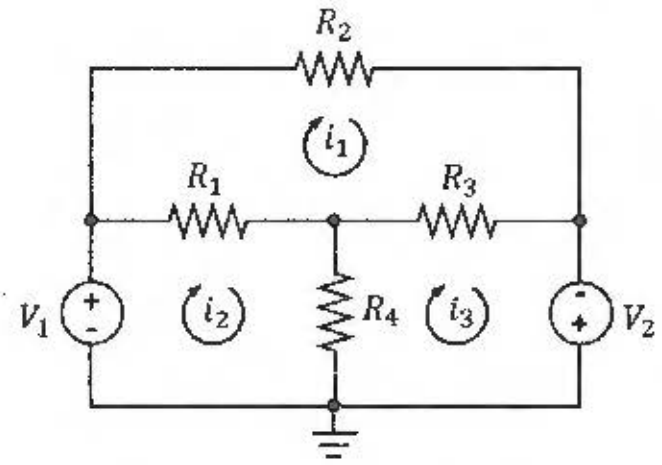
i3 (A) :

Find the mesh currents i_1, i_2, and i_3.



R1 = 1 Ω

R2 = 1 Ω

R3 = 2 Ω

R4 = 1 Ω

V1 = 4 V

V2 = 3V

⊗ MESH 1 : $1 \cdot i_1 + 2(i_1 - i_3) + 1(i_1 - i_2) = 0 \Rightarrow 4i_1 - i_2 - 2i_3 = 0$ (1)

⊗ MESH 2 : $-4 + 1(i_2 - i_1) + 1 \cdot (i_2 - i_3) = 0 \Rightarrow -i_1 + 2i_2 - i_3 = 4$ (2)

⊗ MESH 3 : $1 \cdot (i_3 - i_2) + 2 \cdot (i_3 - i_1) - 3 = 0 \Rightarrow -2i_1 - i_2 + 3i_3 = 3$ (3)

(1). $i_2 = 4i_1 - 2i_3$

(1) IN (2): $-i_1 + 8i_1 - 4i_3 - i_3 = 4 \Rightarrow 7i_1 - 5i_3 = 4$ (4)

(1) IN (3). $-2i_2 - 4i_1 + 2i_3 + 3i_3 = 3 \Rightarrow -6i_1 + 5i_3 = 3$ (5)

(4) + (5). $\boxed{i_1 = 7A}$

$\boxed{i_3 = 9A}$ $\boxed{i_2 = 10A}$

CHECK KVL