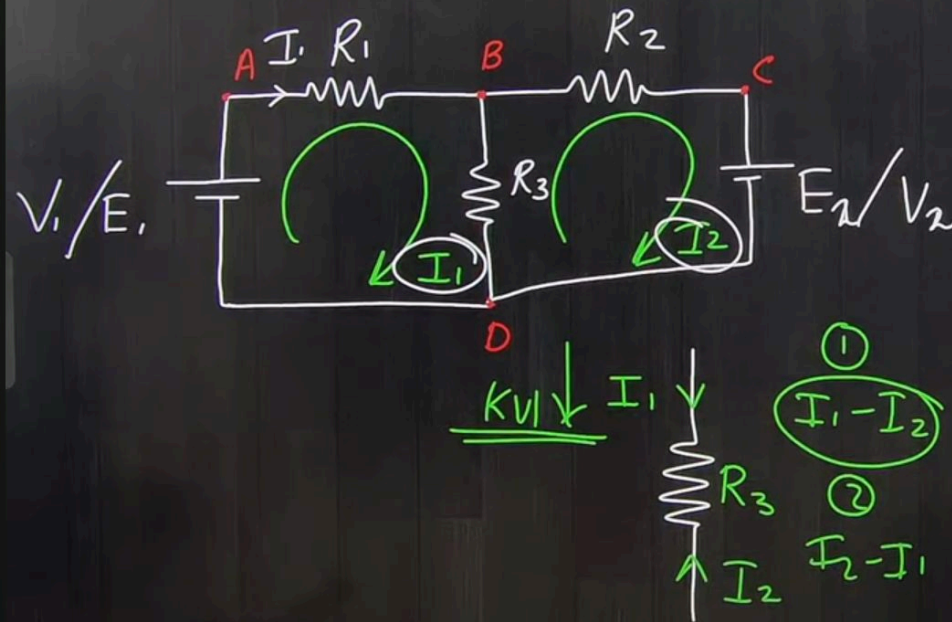


Maxwell's Mesh Current Method.

16:03



Apply KVL to mesh ABDA

$$+V_1 - I_1 R_1 - (I_1 - I_2) R_3 = 0$$

$$-I_1 R_1 - I_1 R_3 + I_2 R_3 = -V_1$$

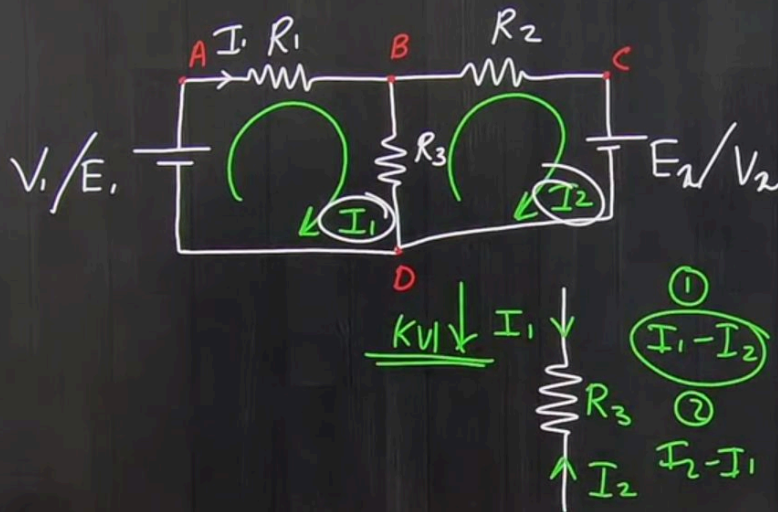
$$-I_1 (R_1 + R_3) + I_2 R_3 = -V_1 \quad \text{--- (1)}$$

Apply KVL to mesh BCDB

$$-I_2 R_2 - V_2 - (I_2 - I_1) R_3 = 0$$

$$-I_2 R_2 - V_2 - I_2 R_3 + I_1 R_3 = 0$$

$$I_1 R_3 - I_2 (R_2 + R_3) = V_2 \quad \text{--- (2)}$$



$$\frac{I_1}{I_2} = -ve.$$

$$R_3 = \frac{(I_1 - I_2)}{(I_2 - I_1)}$$

Apply KVL to mesh ABDA

$$+V_1 - I_1 R_1 - (I_1 - I_2) R_3 = 0$$

$$-I_1 R_1 - I_1 R_3 + I_2 R_3 = -V_1$$

$$-I_1 (R_1 + R_3) + I_2 R_3 = -V_1$$

Apply KVL to mesh BCDB

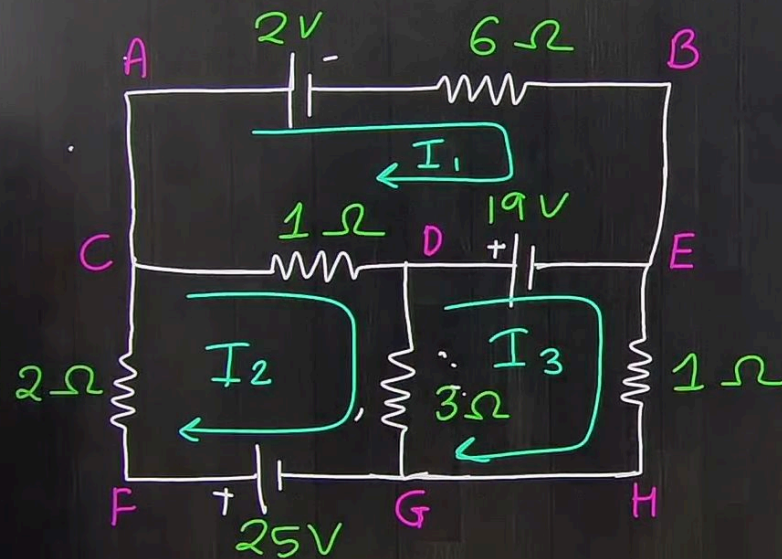
$$-I_2 R_2 - V_2 - (I_2 - I_1) R_3 = 0$$

$$-I_2 R_2 - V_2 - I_2 R_3 + I_1 R_3 = 0$$

$$I_1 R_3 - I_2 (R_2 + R_3) = V_2$$

16:05

Q. By mesh analysis find mesh currents I_1, I_2, I_3 in network.



Apply KVL to mesh ABEDCA

$$-2 - 6I_1 + 19 - 1(I_1 - I_2) = 0$$

$$\boxed{7I_1 - I_2 = 17} \text{--- ①}$$

Apply KVL to CDGFC

$$-1I_2 - 3(I_2 - I_3) + 25 - 2I_2 = 0$$

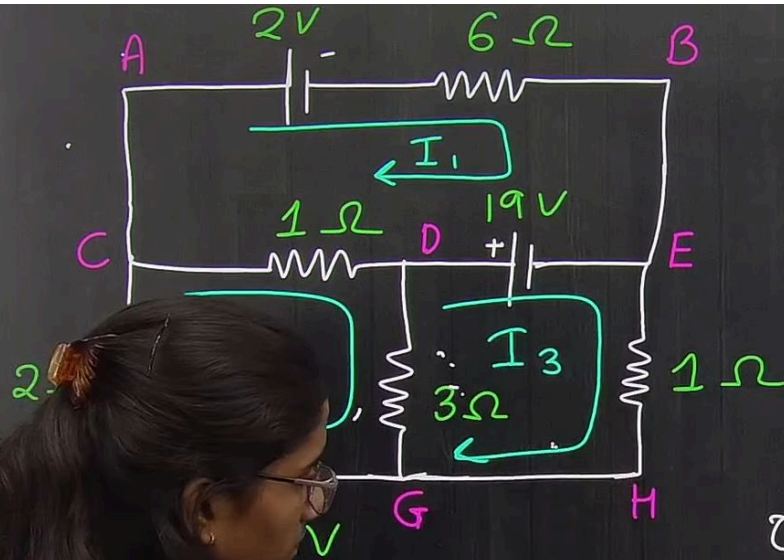
$$\boxed{I_1 - 6I_2 + 3I_3 = -25} \text{--- ②}$$

Apply KVL to DEHGD

$$-19 - 1I_3 - 3(I_3 - I_2) = 0$$

$$\boxed{3I_2 - 4I_3 = 19} \text{--- ③}$$

16:17



$$17I_1 - I_2 = 17 \quad \text{--- (1)}$$

Apply KVL to CDAFC

$$-1I_2 - 3(I_2 - I_3) + 25 - 2I_2 = 0$$

$$I_1 - 6I_2 + 3I_3 = -25 \quad \text{--- (2)}$$

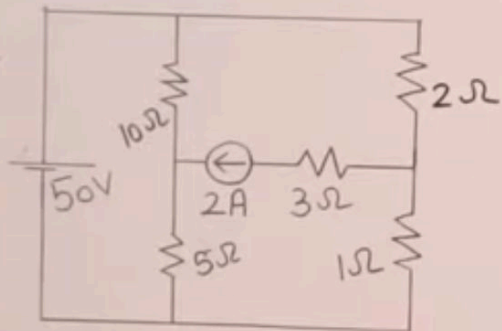
Apply KVL to DEHGD

$$-19 - 1I_3 - 3(I_3 - I_2) = 0$$

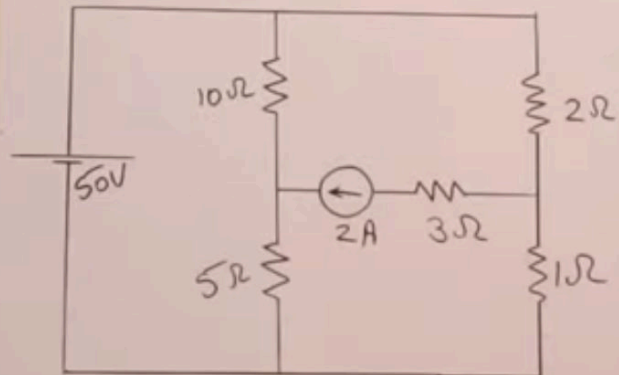
$$0I_1 + 3I_2 - 4I_3 = 19 \quad \text{--- (3)}$$

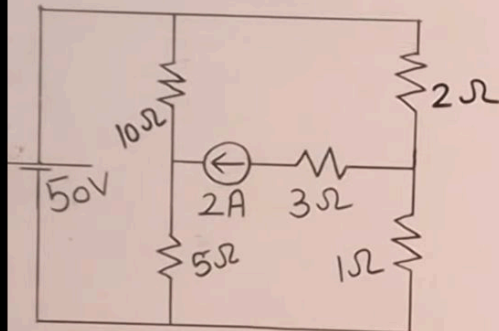
$$\begin{aligned} x &= I_1 = 2.95A \\ y &= I_2 = 3.65A \\ z &= I_3 = 2.009A \quad (S) \end{aligned}$$

16:20

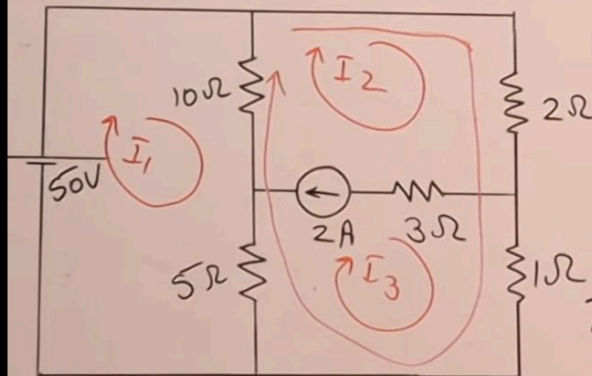


=> Find the Current flowing through 5Ω resistor.





Find the current flowing through 5Ω resistor.



Applying KVL to Mesh 1

$$10(I_1 - I_2) + 5(I_1 - I_3) = 50$$

$$10I_1 - 10I_2 + 5I_1 - 5I_3 = 50$$

$$15I_1 - 10I_2 - 5I_3 = 50 \quad \text{--- (1)}$$

Mesh 2 and Mesh 3 shares a common current source and it forms a supermesh

Writing current equation for Supermesh

$$I_2 - I_3 = 2 \quad \text{--- (2)}$$

Applying KVL to Supermesh

$$10(I_2 - I_1) + 2I_2 + 1I_3 + 5(I_3 - I_1) = 0$$

$$10I_2 - 10I_1 + 2I_2 + 1I_3 + 5I_3 - 5I_1 = 0$$

$$-15I_1 + 12I_2 + 6I_3 = 0 \quad \text{--- (3)}$$

$$I_1 = 20A \quad I_2 = 17.33A \quad I_3 = 15.33A$$

The current flowing through 5Ω resistor = $I_1 - I_3 = 4.67A$

No. (Bada-Chota) + ... = V
Bada: Wo jisko hum
ghuma rahi hai.
Chota: Wo jiske saath
bada bed share
kar raha hai.