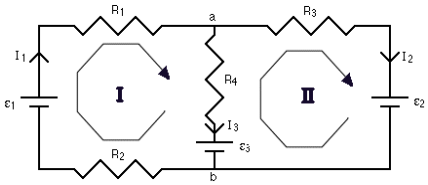

The Loop equations were

$$\begin{aligned} -I_1R_1 - I_1R_2 - I_3R_4 + \varepsilon_1 - \varepsilon_3 &= 0 \\ -I_1(R_1 + R_2) - I_3R_4 + \varepsilon_1 - \varepsilon_3 &= 0 \qquad \text{(Loop I)} \\ -I_2R_3 + I_3R_4 - \varepsilon_2 + \varepsilon_3 &= 0 \qquad \text{(Loop II)} \end{aligned}$$

The nodal equation is

$$I_1 - I_2 - I_3 = 0 \qquad \text{(Nodal Eqn.)}$$

Using the values $\varepsilon_1 = 19V$; $\varepsilon_2 = 6V$; $\varepsilon_3 = 2V$ and $R_1 = 6\Omega$; $R_2 = 4\Omega$; $R_3 = 4\Omega$; $R_4 = 1\Omega$ we get the following equations:

$$\begin{aligned} -10\,I_1 - I_3 &= -17 \qquad (1) \\ -4\,I_2 + I_3 &= 4 \qquad (2) \\ I_1 - I_2 - I_3 &= 0 \qquad (3) \end{aligned}$$

Solving Equation 1 for I_1, we get

$$I_1 = \frac{-17 + I_3}{-10} \qquad (4)$$

Solving equation 2 for I_2, we get

$$I_2 = \frac{4 - I_3}{-4} \qquad (5)$$

Now substitute Equations 4 and 5 into Equation 3 to get

$$\frac{17 - I_3}{10} + \frac{4 - I_3}{4} - I_3 = 0 \qquad (6)$$

Now multiply Equation 6 by 40 to get

$$\begin{aligned} 68 - 4\,I_3 + 40 - 10\,I_3 - 40\,I_3 &= 0 \\ 54\,I_3 &= 108 \\ I_3 &= 2\ Amps \qquad (7) \end{aligned}$$

Now substitute this into Equations 4 and 5 to get

$$I_1 = \frac{-17 + 2}{-10} = 1.5\ Amps \qquad (8)$$

$$I_2 = \frac{4 - 2}{-4} = -0.5\ Amps \text{ in the direction opposite to that indicated} \qquad (9)$$