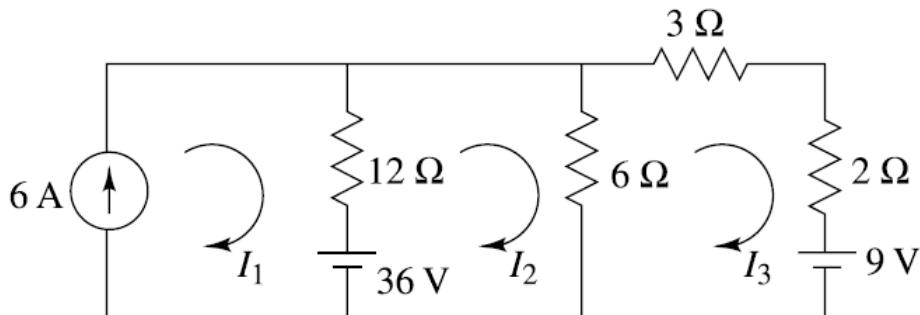


Lecture 11

1. Find the current through the 2Ω resistor.



SOLUTION: Mesh 1 contains a current source of 6 A. Hence, we cannot write KVL equation for Mesh 1. Since direction of current source and mesh current I_1 are same

$$I_1 = 6 \text{ A}$$

Applying KVL to Mesh 2,

$$\begin{aligned} 36 - 12(I_2 - I_1) - 6(I_2 - I_3) &= 0 \\ 36 - 12(I_2 - 6) - 6I_2 + 6I_3 &= 0 \\ 18I_2 - 6I_3 &= 108 \end{aligned}$$

Applying KVL to Mesh 3,

$$\begin{aligned} -6(I_3 - I_2) - 3I_3 - 2I_3 - 9 &= 0 \\ 6I_2 - 11I_3 &= 9 \end{aligned}$$

Solving equations (ii) and (iii),

$$\begin{aligned} I_3 &= 3 \text{ A} \\ I_{2\Omega} &= 3 \text{ A} \end{aligned}$$