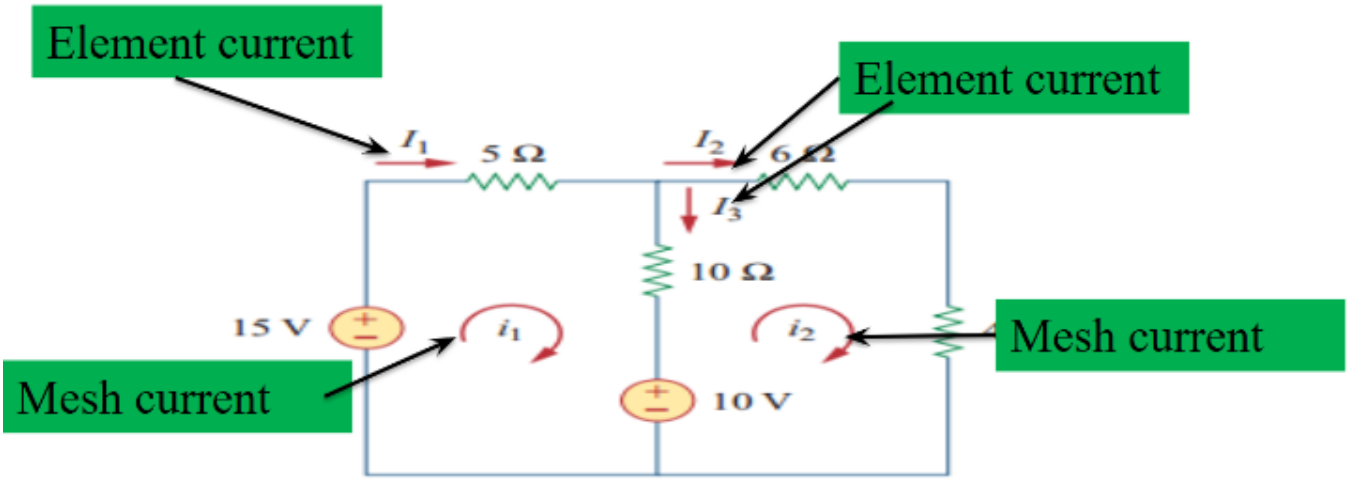
5 - Mesh

Mesh Analysis

A mesh is a loop which does not contain any other loops with it.

Mesh analysis provides another general procedure for analyzing circuits.

Mesh currents is used as the circuit variables



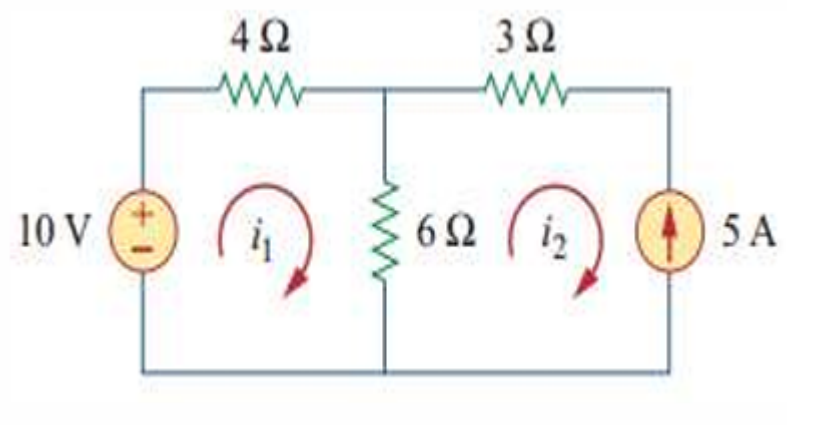
Steps to Determine Mesh Currents

1. Assign mesh currents $i_1, i_2, \ldots \ldots, i_n$ to the n meshes
2. Apply KVL to each of the n meshes. Use Ohm's law to express the voltages in terms of mesh currents
3. Solve the resulting n simultaneous equations to get the mesh currents

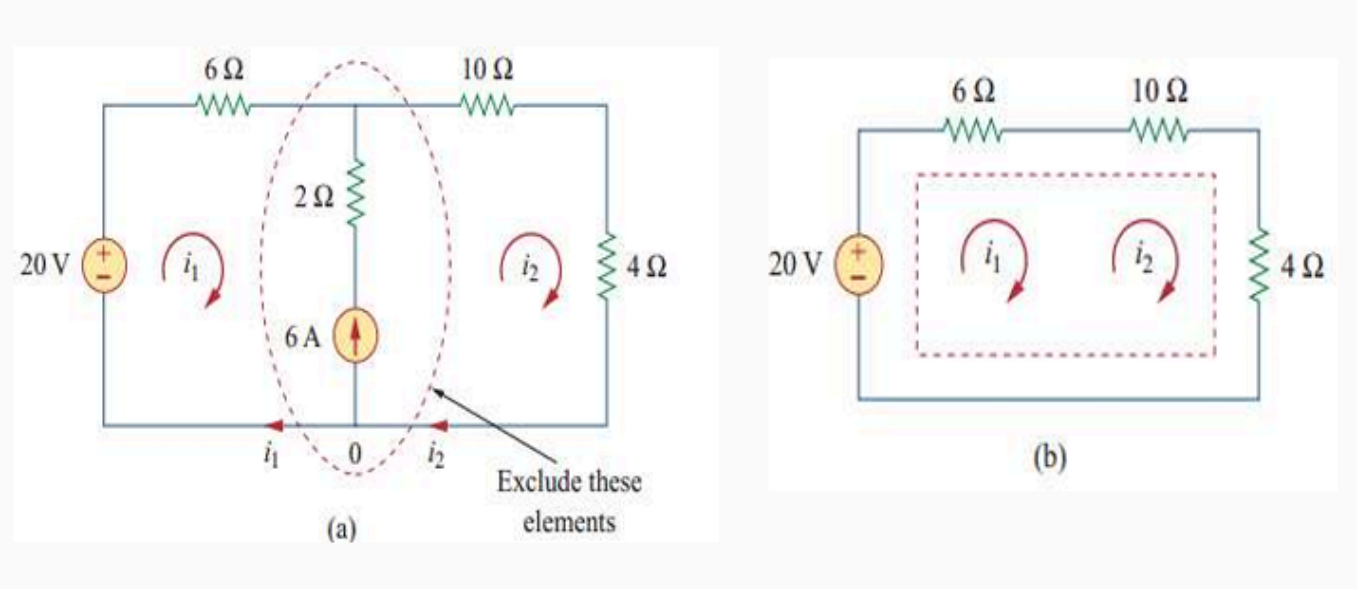
Mesh Analysis with Current Sources

When a current source exist only in one mesh, mesh current can be determined directly. Consider the following circuit, we can set $i_2 = -5A$ and write a mesh equation for the other

mesh in the usual way.



When a current source exists between two meshes, we create a supermesh by excluding the current source and any elements connected in series with it.



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