The Mesh Analysis Method

A mesh is a loop that contains no other loop.

Formulation of the equations:

1. Identify all of the meshes, and define a mesh current flowing around each one.
2. If there are current sources, either independent or controlled, for each one:
    a. Write down the current constraint equation.
    b. Mentally delete the branch containing that source. If the current source was not on the boundary of the circuit, this may create a supermesh.
3. Write a KVL equation for each supermesh, and for each of the remaining original meshes. Express the resistor voltages in terms of the mesh currents and the resistance values.
4. If there are controlled sources, define each control variable in terms of the mesh currents.
5. Write the equations in matrix form.

    --- *At this point, no substitutions should yet have been made* ---

Solution of the equations:

6. Now, use any method of your choice to solve the equations.