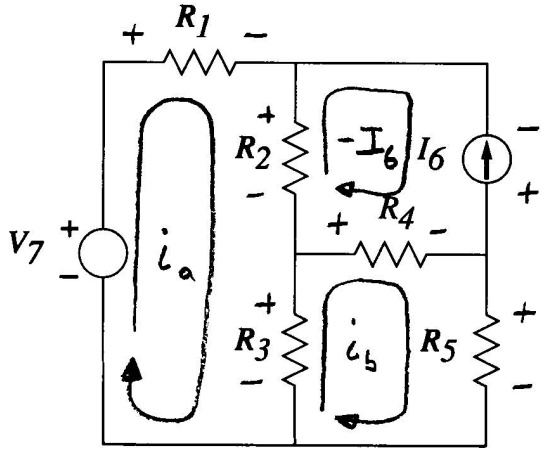
The first steps are to label the loop currents (to allow solution by the loop method) and to label each element with +/- signs (so we can talk about branch currents, voltages).



Next, we write KVL around each loop with unknown current. This can be done "by inspection":

$$i_a: \quad (R_1+R_2+R_3)\,i_a - R_3\,i_b = -R_2 I_6 + V_7$$

$$i_b: \quad -R_3\,i_a + (R_3+R_4+R_5)\,i_b = -R_4 I_6$$

Plugging in values, we have that

$$8\,i_a - 3\,i_b = -7$$
$$-3\,i_a + 7\,i_b = -15$$

This 2x2 set of equations can be solved by Cramer's rule, etc., to obtain

$$i_a = -2\ A$$
$$i_b = -3\ A$$

The branch currents are just the algebraic sum of loop currents:

$$i_1 = +i_a = -2A$$
$$i_2 = i_a + I_c = 3A$$
$$i_3 = i_a - i_b = 1\ A$$
$$i_4 = i_b + I_c = 2A$$
$$i_5 = i_b = -3\ A$$
$$i_6 = I_c = 5A$$
$$i_7 = -i_a = 2A$$

The voltages are found by applying the constitutive laws:

$$v_1 = i_1 R_1 = -6\ V$$
$$v_2 = i_2 R_2 = 6\ V$$
$$v_3 = i_3 R_3 = 3\ V$$
$$v_4 = i_4 R_4 = 6\ V$$
$$v_5 = i_5 R_5 = -3\ V$$
$$v_7 = V_7 = 3\ V$$

Note that the constitutive law for the current source,

$$i_6 = I_6, \text{ for all } v_6$$

gives no information about v_6. To find v_6, apply KVL around I_6 loop:

$$-v_4 - v_2 - v_6 = 0$$

$$\Rightarrow \quad v_6 = -v_2 - v_4$$

$$= -12\,V$$

$$\boxed{v_6 = -12\,V}$$

Of course, these values agree with those of S3.