Say you are given $R_1, R_2, R_3, E_1, E_2$ and need to find $I_1, I_2, I_3$

3 equations

Loop 1: $E_1 - I_1 R_1 - I_2 R_2 - E_2 = 0$

Loop 2: $E_2 + I_2 R_2 - I_3 R_3 = 0$

Junction 1: $I_1 = I_2 + I_3$

Now solve!

From 2: $I_2 R_2 = I_3 R_3 - E_2$, plug into 1

to get $E_1 - I_1 R_1 - I_3 R_3 + E_2 - E_2 = 0$

Now solve this for $I_1$ by junction

$I_1 = \frac{E_1 - I_3 R_3}{R_1} = I_2 + I_3$
Now solve for $I_2$:

$$I_2 = \frac{E_1}{R_1} - \frac{R_3}{R_1} I_3 - I_3$$

so $I_2 R_2 = \frac{R_2}{R_1} E_1 - \frac{R_2 R_3}{R_1} I_3 - R_2 I_3$

and plug this into loop 2 eqn and solve for $I_3$

$$E_2 + \frac{R_2}{R_1} E_1 - \frac{R_2 R_3}{R_1} I_3 - R_2 I_3 - I_3 R_3 = 0$$

Collect $I_3$ terms and solve:

$$E_2 + \frac{R_2}{R_1} E_1 = \left[ \frac{R_2 R_3}{R_1} + R_2 + R_3 \right] I_3$$

So

$$I_3 = \frac{E_2 + \frac{R_2}{R_1} E_1}{\left[ \frac{R_2 R_3}{R_1} + R_2 + R_3 \right]}$$

You know numbers for all this, so calculate it.

Then plug $I_3$ value into loop 2 eqn, and solve for $I_2$ and

Finally $I_1$ by $I_1 = I_2 + I_3$

... Easy as pie!