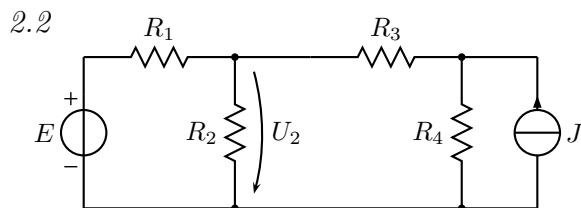
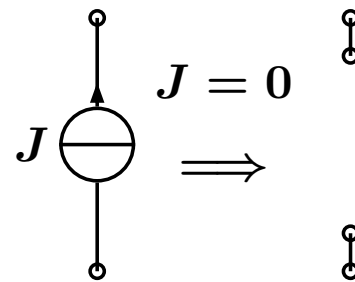
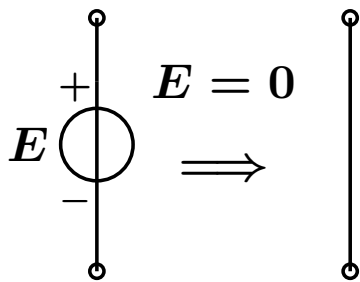


ELEC-C9610 Basics in Electronics

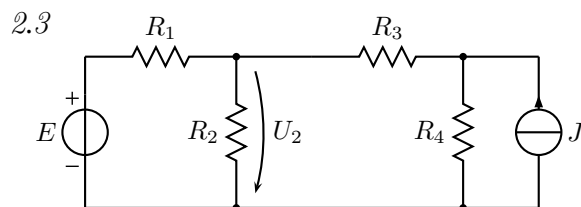
Calculation assignment 2. Deadline 14:00, September 28th, 2021

- 2.1 When using the superposition method to analyze a circuit, we turn off sources in turn. Turning off a voltage source means to replace it by a short circuit. Turning off a current source is realized by replacing it by an open circuit. Now, explain,
- why turning off a voltage source canNOT be realized by replacing it by an open circuit and
 - why turning off a current source canNOT be realized by replacing it by a short circuit.



$R_1 = 3 \Omega$, $R_2 = 6 \Omega$, $R_3 = 2 \Omega$, $R_4 = 8 \Omega$, $E = 9 \text{ V}$ and $J = 5 \text{ A}$. We aim at finding the voltage U_2 over the resistance R_2 .

- Express the circuit using voltage sources and resistances by transforming the current source to a voltage source. Then solve U_2 using Kirchhoff's laws (DO NOT use further transforms from voltage to current sources).
- Express the circuit using current sources and resistances by transforming the voltage source to a current source. Then solve U_2 using Kirchhoff's laws. Do you get the same voltage value as a)?



$R_1 = 3 \Omega$, $R_2 = 6 \Omega$, $R_3 = 2 \Omega$, $R_4 = 8 \Omega$, $E = 9 \text{ V}$ and $J = 5 \text{ A}$.

Find the voltage U_2 over the resistance R_2 using the superposition method. Do you get the same voltage value as exercise 2.2?