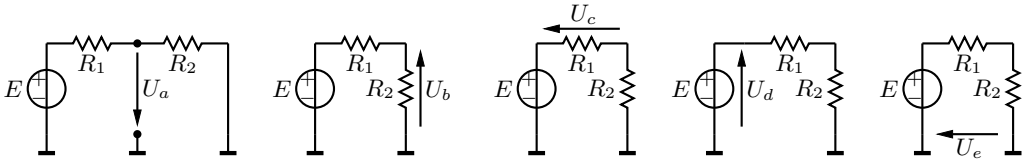
Problem Set 2

Problem 1. Determine the labelled voltages.



Answer. $U_a = -E\frac{R_2}{R_1+R_2}$, $U_b = E\frac{R_2}{R_1+R_2}$, $U_c = E\frac{R_1}{R_1+R_2}$, $U_d = E$, $U_e = 0\,\mathrm{V}$.

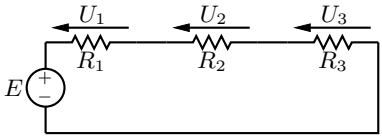
Problem 2. Determine the labelled voltages.

Answer. $U_a = -U_d = E\frac{G_2}{G_1+G_2}$, $U_b = U_c = E\frac{G_1}{G_1+G_2}$, $U_e = 0\,\mathrm{V}$.

Problem 3. Determine the labelled currents.

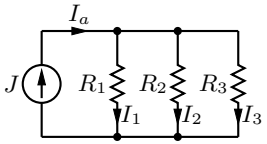
Answer. $I_a = J$, $I_b = J\frac{R_2}{R_1+R_2}$, $I_c = J\frac{R_1}{R_1+R_2}$, $I_d = -J\frac{G_1}{G_1+G_2}$, $I_e = J\frac{G_2}{G_1+G_2}$, $I_f = -J$.

Problem 4. Find voltages U_1, U_2, U_3.



Answer. $U_1 = E\frac{R_1}{R_1+R_2+R_3}$, $U_2 = E\frac{R_2}{R_1+R_2+R_3}$, $U_3 = E\frac{R_3}{R_1+R_2+R_3}$.

Problem 5. Find currents I_1, I_2, I_3.



Answer. $I_1 = J\frac{1/R_1}{1/R_1+1/R_2+1/R_3}$, $I_2 = J\frac{1/R_2}{1/R_1+1/R_2+1/R_3}$, $I_3 = J\frac{1/R_3}{1/R_1+1/R_2+1/R_3}$.