Problem 1. (a) Find the (leading) symmetrical components, \( I_a^0 \), \( I_a^+ \), and \( I_a^- \), for \( I_a = 1 \), \( I_b = 10 \), and \( I_c = -10 \); (b) Check by sketching \( \vec{I}_a \), \( \vec{I}_b \), and \( \vec{I}_c \), as the sum of appropriate symmetrical components.

Problem 2. Find the symmetrical components of \( E_a = e^{j0} \), \( E_b = e^{-j\pi/2} \), \( E_c = e^{-j3\pi/4} \).

Problem 3. Refer to Fig. 1, and assume that \( E_a = 1 \), \( E_b = -1 \), \( E_c = j1 \). (a) Describe how you would use the method of symmetrical components to find \( I_a \), \( I_b \), and \( I_a \); (b) Carry out the procedure.

Problem 4. In Fig. 2, the source voltages are positive-sequence sets and \( Z_f = Z \). Using an appropriate interconnections of sequence networks, find \( I_f \) (in terms of \( Z \), and \( V_{a'g} \)).