1. Power system, shown on the Figure 1, supply consumption area with \( \tan \phi_p = 1 \). Voltage magnitude at bus 1 is constant \( U_1 = 10.5 \) kV.
   a) Find consumption area active and reactive power if voltage at bus 2 is \( U_2 = 9.4 \) kV.
   b) With shunt capacitor bank on the bus 2, voltage magnitude at bus 2 will increase from 9.4 kV to 10 kV. Find reactive power of that condensator battery.

![Figure 1](image1)

2. Simply power system is shown on the Figure 2. In the case of single phase to ground fault at bus 3 find:
   a) Fault current at bus 3.
   b) Phase currents who flow through transformer T3.

Voltage at bus 3 before fault was \( 220/\sqrt{3} \) kV.

![Figure 2](image2)
3. For transformer, given at Figure 3, draw primary and secondary voltage vector diagrams, and find phase group.

![Figure 3](image1)

4. Simply power system is given on the Figure 4. Find voltage magnitudes and angles after first iteration of the Newton-Raphson method for load flow calculation. Bus data are given in a table.

![Figure 4](image2)

<table>
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<th>θ (rad)</th>
<th>P_G (r.j.)</th>
<th>P_P (r.j.)</th>
<th>Q_G (r.j.)</th>
<th>Q_P (r.j.)</th>
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