VE215 2025SU Assignment 7

Due Date: 23:59, July.31th, 2025
In order to get full marks, you shall write all the intermediate steps of calculation or proof, unless otherwise indicated. **Please box your answers.**

Exercise 7.1 (20%) Find the unknown current i_x in the circuit below, where $i_s = 4\cos(600t)A$ and $v_s = 110\cos(600t + 30°)V$

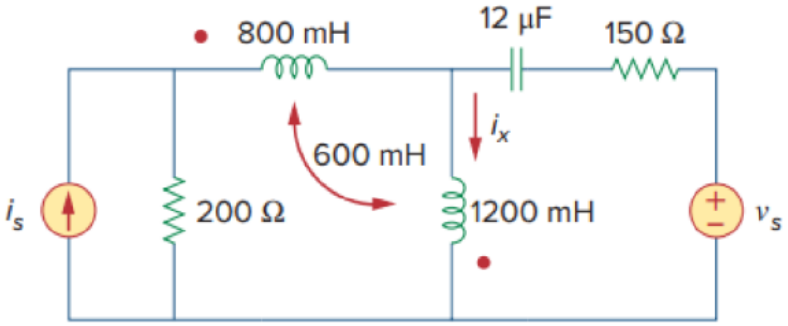

Figure 1: Exercise7.1

Exercise 7.2 $V_s = 10\cos(4t + \pi/4)$, $R_1 = R_2 = 5\Omega$, $R_3 = 10\Omega$,$X_{L1} = 15\Omega$, $X_{L2} = 20\Omega$,$X_M = 2\Omega$,$X_C = 0.5\Omega$. Find I_1 and I_2.

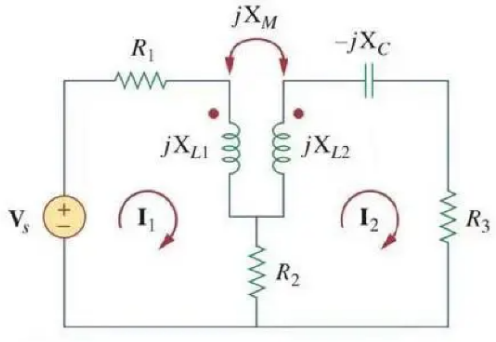

Figure 2: Exercise7.2

Exercise 7.3 Determine I_1, I_2, I_3 in the circuit.

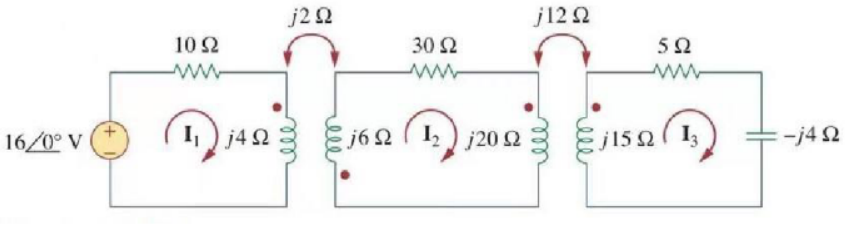

Figure 3: Exercise7.3

Exercise 7.4 Find the input impedence Z_{in} of the circuit below.

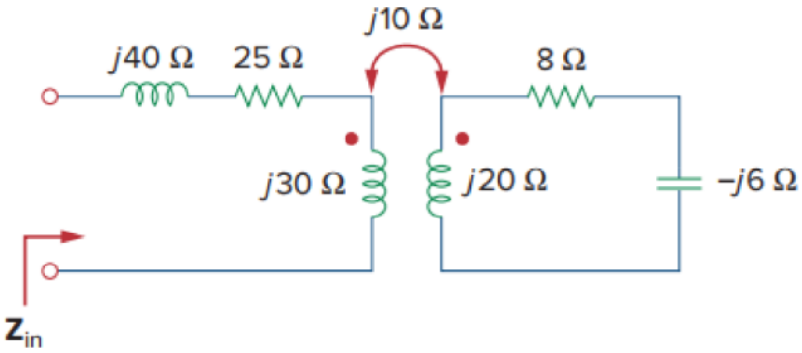

Figure 4: Exercise7.4

Exercise 7.5 Find the current I_1, I_2 and I_0 in the circuit below, and the average power delivered to the load $10 + j40\Omega$.

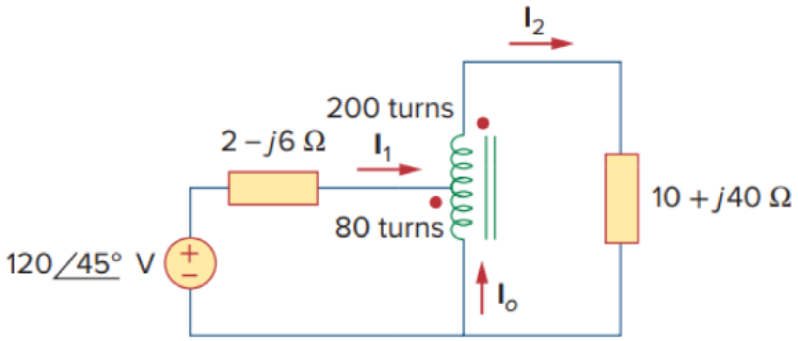

Figure 5: Exercise7.5