Tutorial 4

Problem 1

In the circuit shown in Fig 1, find the phase angle difference between I, I_2 in degrees.

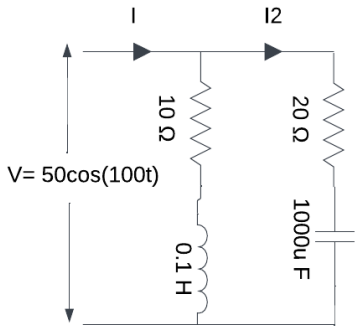

Figure 1: Fig 1

Ans: 45^0

Problem 2

From the circuit shown find the instantaneous current $i_1(t)$.

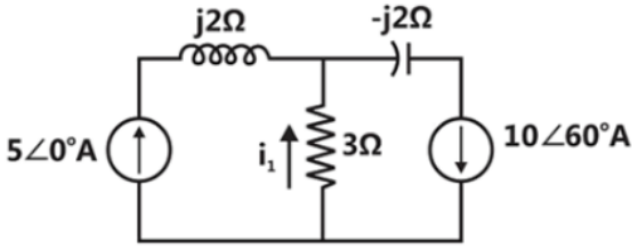

Figure 2: Circuit 2

Ans: $5 * \sqrt{3}\angle 90$

Problem 3

Represent all the currents in circuit 3 in a phasor diagram.

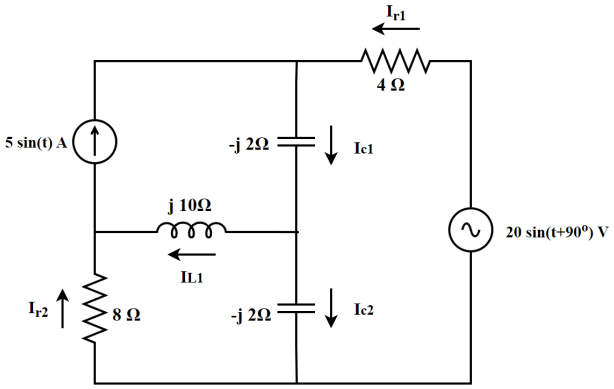

Figure 3: Circuit 3

Problem 4

Find V_3 in the given circuit Fig 4. Given $R_1 = R_2 = R_3 = 1\Omega$, $R_4 = 2\Omega$, $X_L = 2\Omega$ and $X_C = 2\Omega$

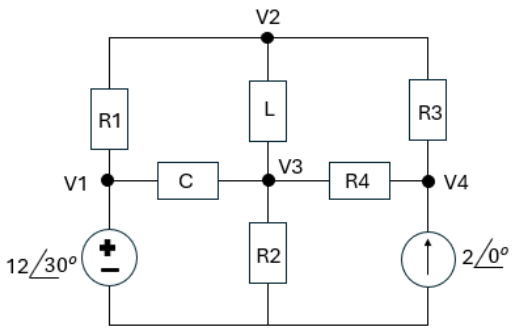

Figure 4: Circuit 4

Problem 5

Find the input impedance Z_{in} that would be measured between terminals: (a) a and g; (b) b and g; (c) a and b

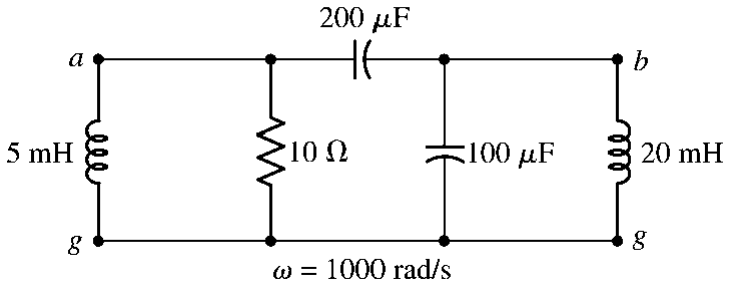

Figure 5: Circuit for problem 5

Ans: $2.81 + j4.49\Omega$, $1.798 - j1.124\Omega$, $0.1124 - j3.82\Omega$