Problem 1
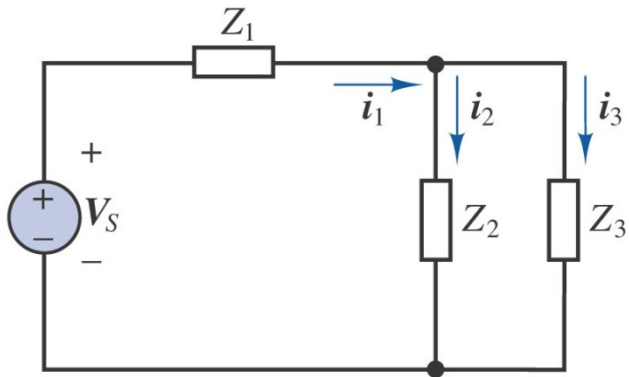
Determine $i_3(t)$ in the circuit below if

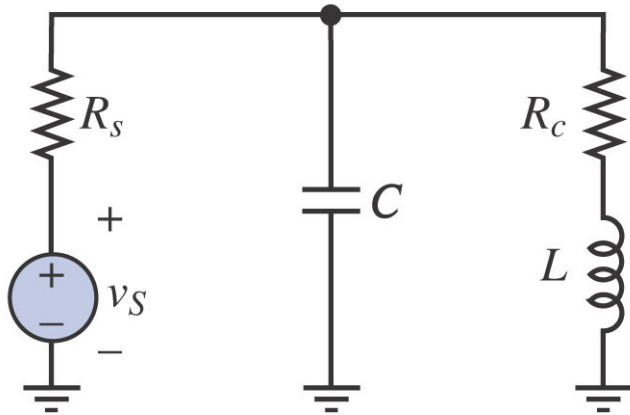$i_1(t) = 141.4\cos(\omega t + 2.356)$ mA

$i_2(t) = 50\sin(\omega t - 0.927)$ mA

$\omega = 377$ rad/s

Problem 2

Determine the current supplied by the source in the circuit below if

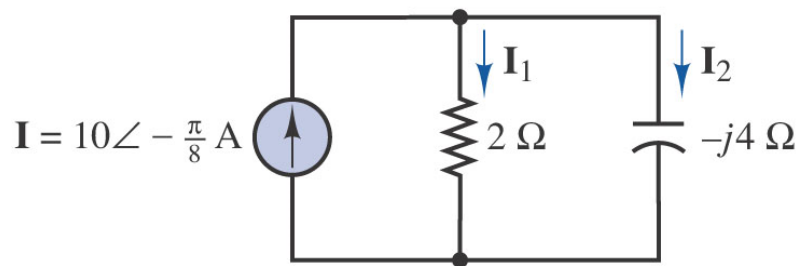$v_s(t) = 10\cos(\omega t + 0)$ V

$\omega = 6$ Mrad/s, $R_s = 50\ \Omega$, $R_c = 40\ \Omega$, $L = 20\ \mu H$, and $C = 1.25$ nF.

Problem 3
Solve for I_1 in the circuit below.

$I = 10\angle - \frac{\pi}{8}$ A

I_1 $2\,\Omega$

I_2 $-j4\,\Omega$

Problem 4
Solve for V_2 in the circuit below. Assume $\omega = 2$ rad/s.

$12\,\Omega$ $6\,H$

$+ \ V_1 \ -$

$V = 25\angle 0$ V

$6\,\Omega$ V_2 $+$ $-$
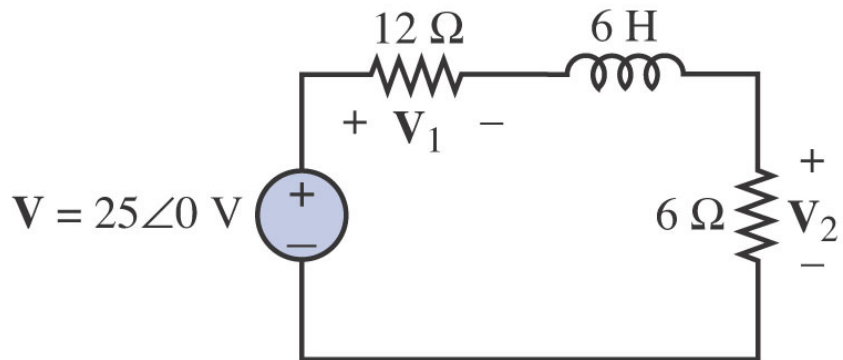
Problem 5
In the circuit below, find the impedance Z, given $\omega = 4$ rad/s.

$1/4\,H$

$Z \rightarrow$ $1/8\,F$ $2\,\Omega$
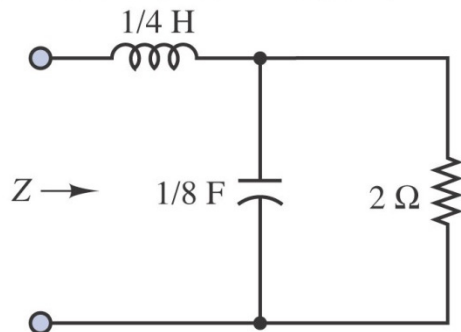
Problem 6

Solve for $i_L(t)$ in the circuit below using phasor techniques, if $v_s(t) = 2\cos 2t$ V, and $R_1 = 4\,\Omega$, $R_2 = 4\,\Omega$, $L = 2$ H, and $C = 0.25$ F.