Rules for the test are the same as outlined in Lecture 12, please review them.

The test will cover material through this lecture.

Given

$$\mathrm{Re}\left\{Ae^{j\theta}e^{j\omega t}\right\} = \mathrm{Re}\left\{Be^{j\phi}e^{j\omega t}\right\}$$

Prove

$$Ae^{j\theta} = Be^{j\phi}$$

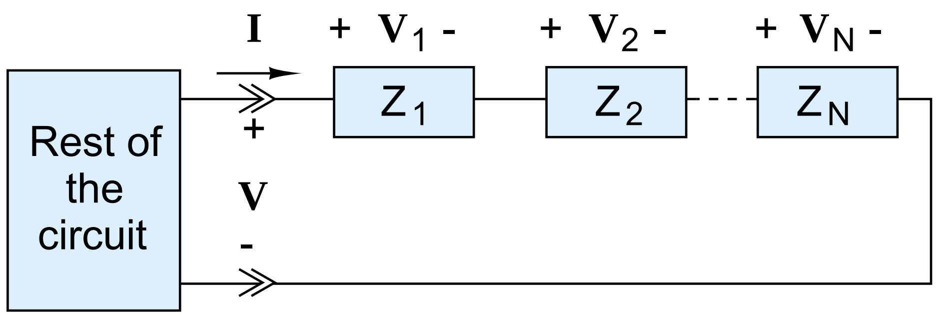
1) $\mathrm{Re}\left\{Ae^{j\theta + j\omega t}\right\} = \mathrm{Re}\left\{Be^{j\phi + j\omega t}\right\}$
since they are exponentials

2) $A\cos(\omega t + \theta) = B\cos(\omega t + \phi), \quad \forall t$
via Euler's equation and the "real" operator

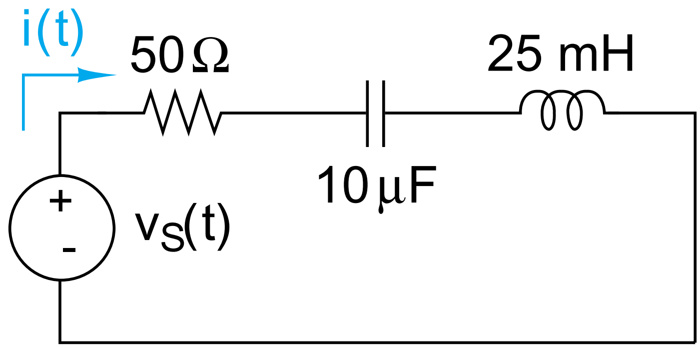
but (2) can only be true if $A = B$ and $\theta = \phi$, thus,

$$Ae^{j\theta} = Be^{j\phi}$$

Have we met somewhere before?

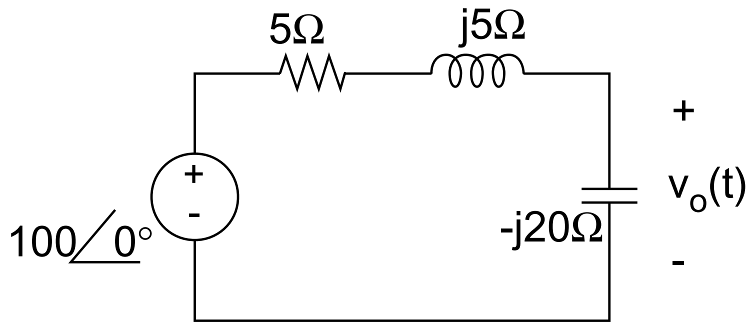


Now this is what a proper lecture is all about,



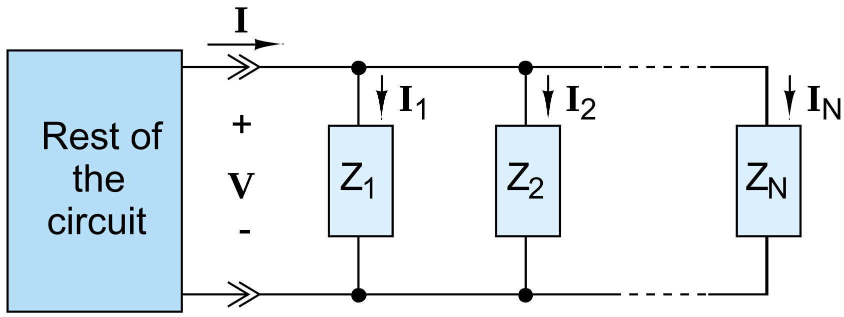
If this circuit is in sinusoidal steady state with $v_s(t)$=35cos(1000t)V, solve for the phasor current and the phasor voltage across each element, then convert back to the time domain.

Now something is resonating here...

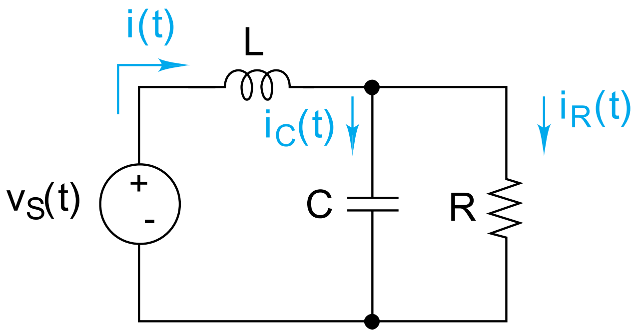


Let ω=377 radians, solve for $v_o(t)$, repeat with Z_L=j20Ω

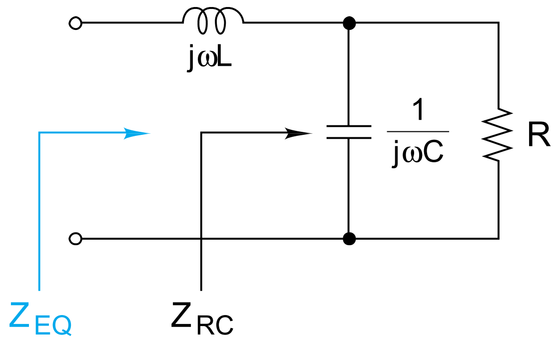
Perhaps it was Paris???



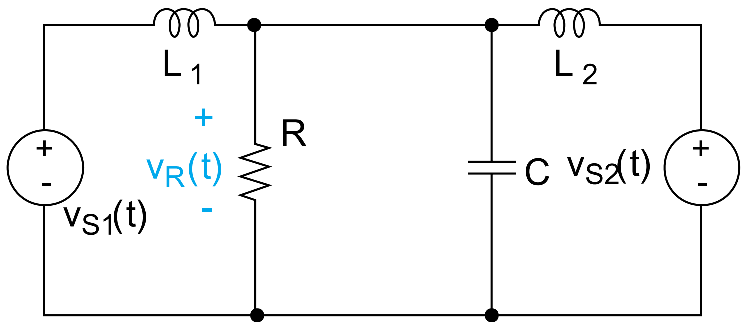
Find the steady state currents in this circuit given $v_s(t)=100\cos 2000t$, $L=250mH$, $C=0.5\mu F$, and $R=3k\Omega$



Now something is resonating here...



Okay, this one is tricky, find $v_R(t)$



$v_{s1}(t)$=100cos5000t, $v_{s2}(t)$=120cos(5000t+30¡), R=20Ω,
L_1=2mH, L_2=6mH, C=20µF