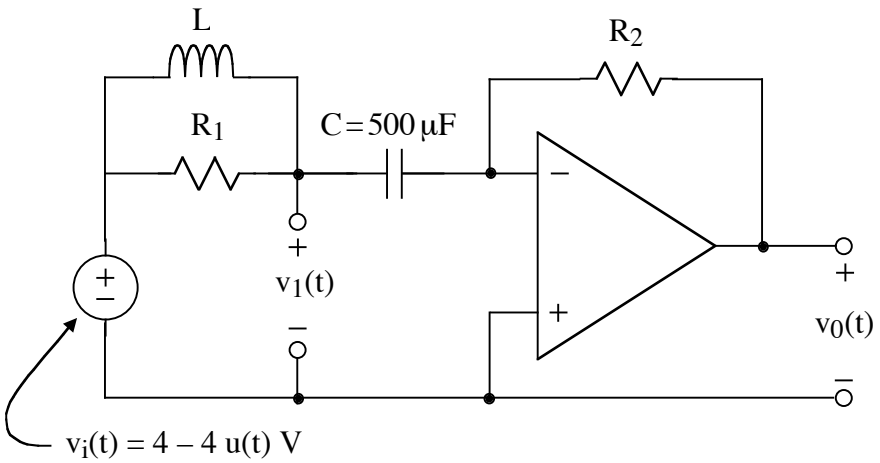
HOMEWORK #10

1.



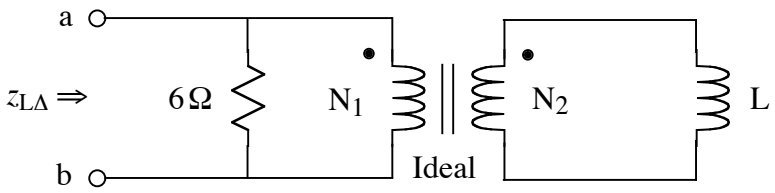
a) Find a symbolic expression for $\mathbf{V}_o(s)$ in terms of not more than R_1, R_2, L, C, and constants.

b) Choose numerical values for R_1 and L to make

$$v_1(t) = v_m e^{-\alpha t}\cos(\beta t + \varphi)$$

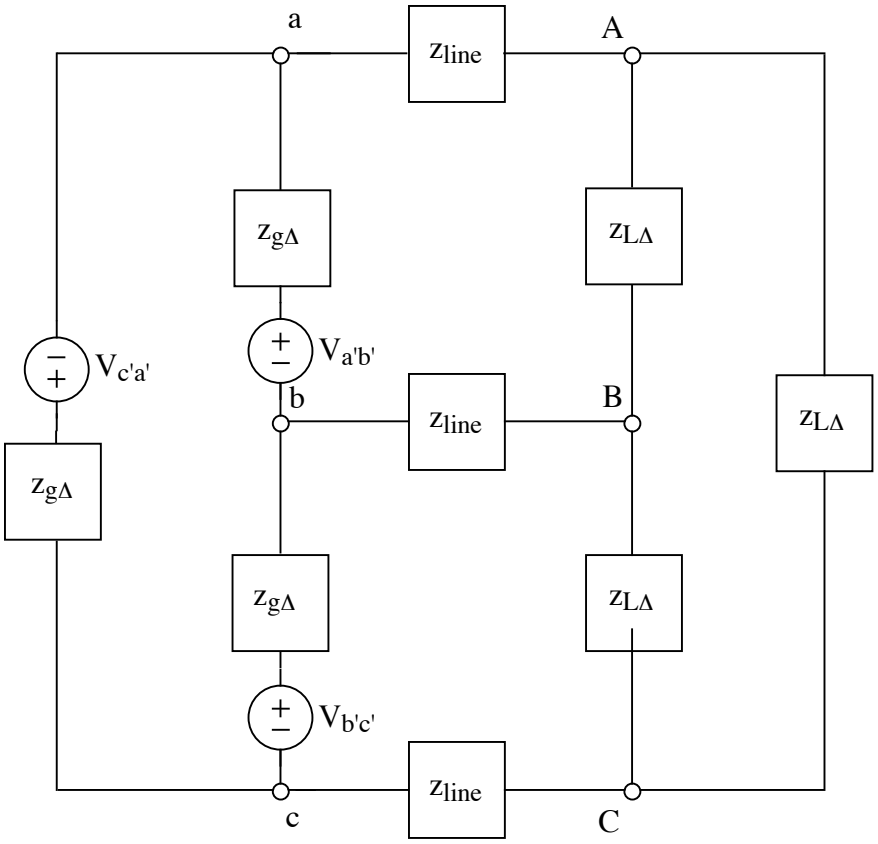
where $\alpha = \beta = 100$ rad/s and v_m and φ are constants.

2.



Given $N_1/N_2 = 2$ and $\omega = 100$ rad/s, find a numerical value for L to make $z_{L\Delta} = 3 + j3\,\Omega$.

3.



$V_{a'b'} = 142\angle 0°$ V $\quad z_{g\Delta} = 24 + j33\ \Omega$

$V_{b'c'} = 142\angle -120°$ V $\quad z_{line} = j28\ \Omega$

$V_{c'a'} = 142\angle 120°$ V $\quad z_{L\Delta} = 3 + j3\ \Omega$

Find the numerical value of the current, $\mathbf{I}_{bB}$.