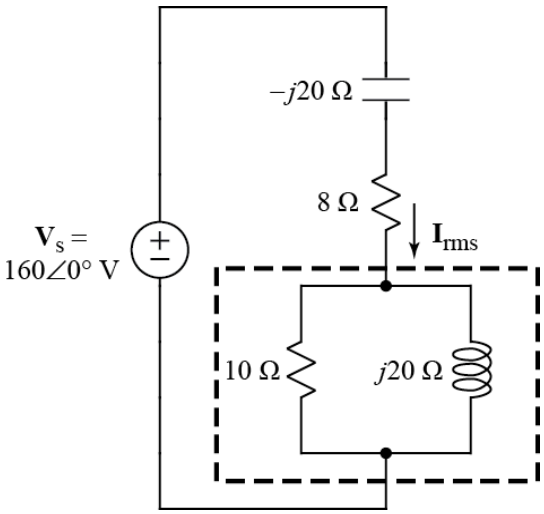
HOMEWORK #8

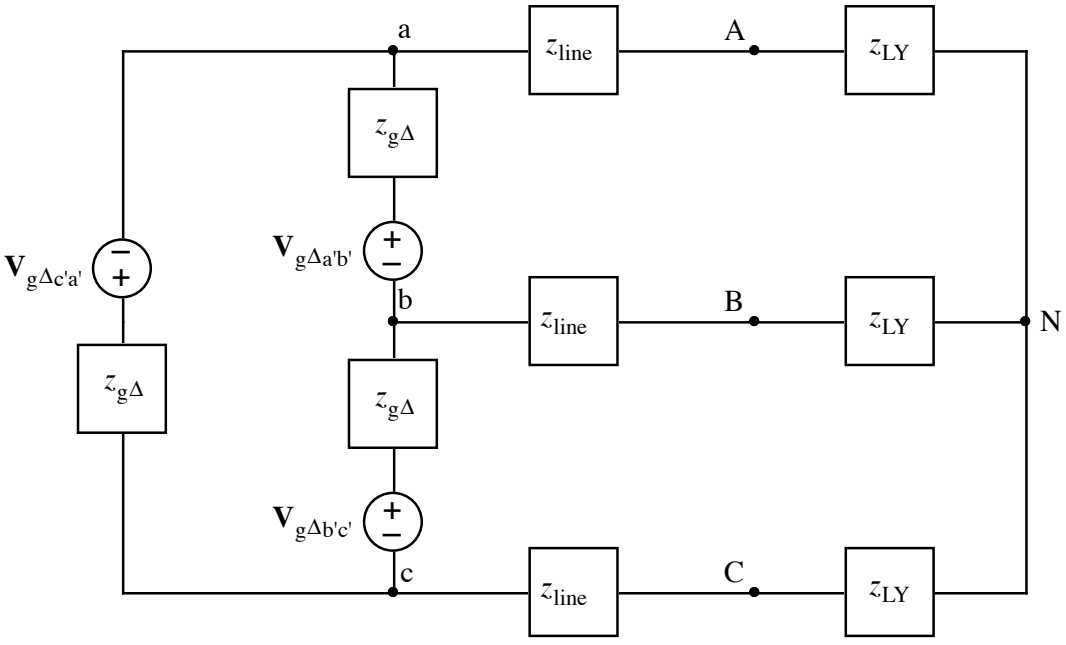
1.



a) Calculate the value of rms current, $\mathbf{I}_{rms}$, flowing down through the dashed box.

b) Calculate the complex power, S, for the circuitry inside the dashed box.

2.



$V_{g\Delta a'b'} = 168\angle 0°$ V $\quad z_{g\Delta} = 0.90 + j1.62\ \Omega$

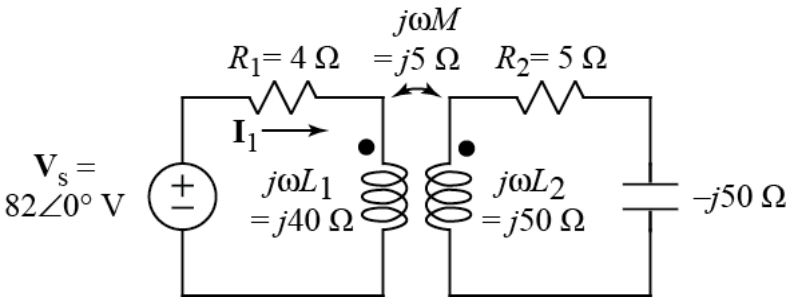
$V_{g\Delta b'c'} = 168\angle +120°$ V $\quad z_{line} = 0.51 + j4.92\ \Omega$

$V_{g\Delta c'a'} = 168\angle -120°$ V $\quad z_{LY} = 7.92 - j1.58\ \Omega$

Draw a single-phase equivalent circuit.

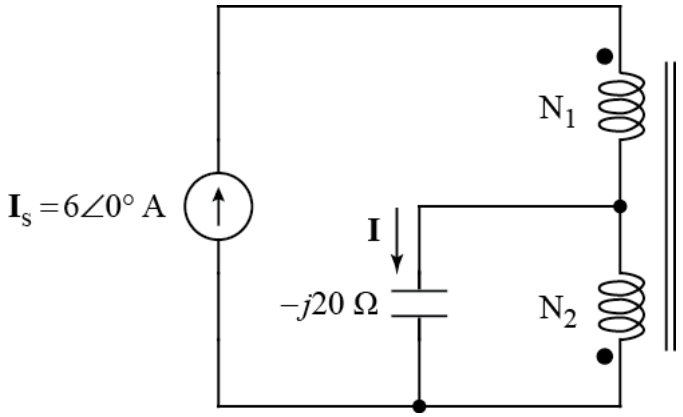
3. Calculate the voltage drop $\mathbf{V}_{BC}$ from B to C.

4.



Calculate the numerical value of phasor current, $\mathbf{I}_1$, flowing into the primary side of the transformer. Note: the transformer is linear.

5.



The turns ratio of the transformer is $N_1/N_2 = 6$. Calculate the numerical value of phasor current, $\mathbf{I}$, flowing down through the capacitor. Note: the transformer is ideal.