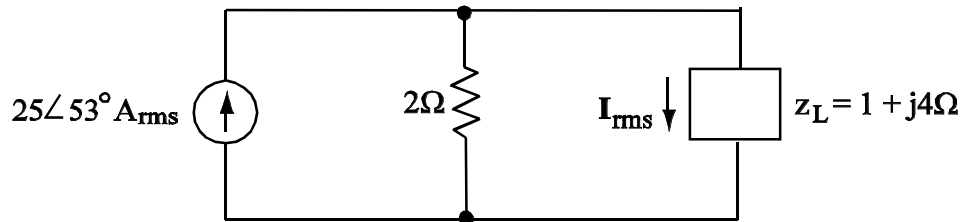
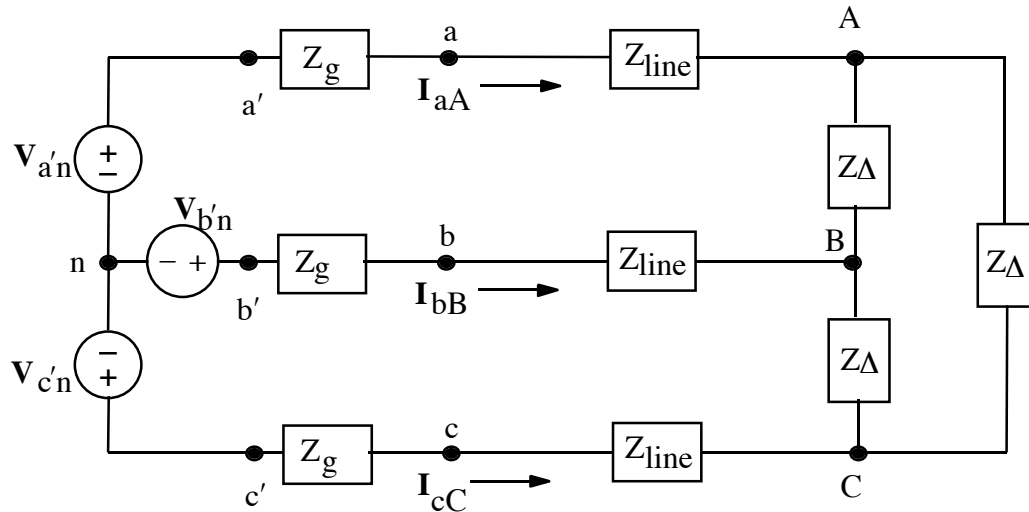


1. (30 points)



- Calculate the value of rms current,  $I_{\text{rms}}$ , flowing through  $z_L$ .
- Calculate the complex power,  $S$ , for  $z_L$ . Include appropriate units.

2. (30 points)



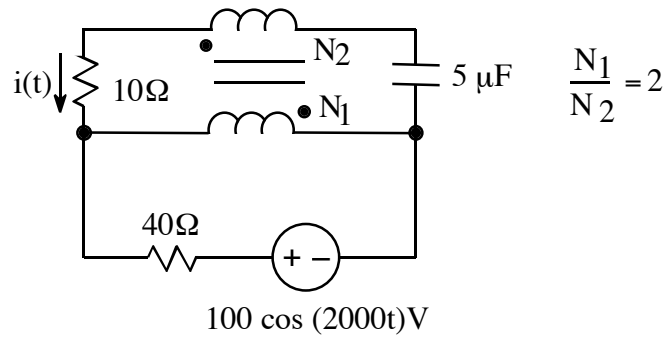
Balanced three-phase, positive-sequence system

$$I_{aA} = 15 \angle 0^\circ \text{ A} \quad Z_g = (0.2 + j0.2)\Omega$$

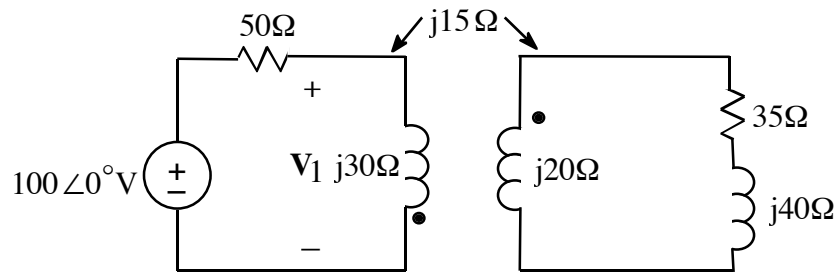
$$V_{aA} = 22.5 \angle 53.13^\circ \text{ V} \quad Z_\Delta = (30 + j24)\Omega$$

- Draw a single-phase equivalent circuit.
- Calculate  $I_{AB}$ .

3. (40 points)



- a. Write a numerical time-domain expression for the current  $i(t)$ .



- b. Calculate  $\mathbf{V}_1$ .