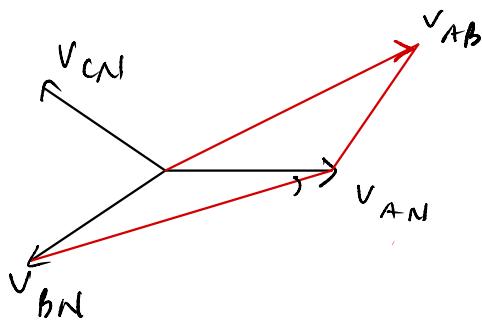


$$\bar{I}_{aA} = \frac{\bar{U}_{a1}}{\bar{Z}_f} \Rightarrow \bar{I}_{bB} = \bar{I}_{aA} \angle -120^\circ$$

$$\bar{I}_c = \bar{I}_{aA} \angle +120^\circ$$

$$\bar{U}_{AN} = \bar{I}_{aA} \bar{Z}_{aA} \Rightarrow \bar{U}_{BN} = \bar{U}_{AN} \angle -120^\circ$$

$$\bar{U}_{CN} = \bar{U}_{AN} \angle +120^\circ$$



$$\begin{aligned} \bar{U}_{AB} &= \bar{U}_A - \bar{U}_{AB} \\ &= \sqrt{3} \bar{U}_{AN} \angle +30^\circ \end{aligned}$$

$$\Rightarrow \bar{U}_{BC} = \bar{U}_{AB} \angle -120^\circ$$

$$\bar{U}_{CA} = \bar{U}_{AB} \angle +120^\circ$$

Line current:

$$\overline{I}_{aA} = \frac{\overline{V}_{aA}}{z_0}$$

abc sequence

$$\overline{I}_{v_b} = \overline{I}_{aA} \angle -120^\circ$$

Line current

$$\overline{I}_{v_c} = \overline{I}_{aA} \angle +120^\circ$$

$$\overline{V}_{AN} = \overline{I}_{aA} \overline{z_A}$$

Phase Voltage
(load)

$$\overline{V}_{BN} = \overline{V}_{AN} \angle -120^\circ$$

$$\overline{V}_{CN} = \overline{V}_{AN} \angle +120^\circ$$

$$\overline{V}_{an} = \overline{V}_{a1n} - \overline{I}_{aA} \overline{z_{l_a}}$$

Phase Source
(V_m)

$$\overline{V}_{b_n} = \overline{V}_{an} \angle -120^\circ$$

$$\overline{V}_{c_n} = \overline{V}_{an} \angle +120^\circ$$

$$\overline{V}_{AB} = \sqrt{3} \overline{V}_{AN} \angle +30^\circ$$

Line Voltage
(load)

$$\overline{V}_{bc} = \overline{V}_{AB} \angle -120^\circ$$

$$\overline{V}_{ca} = V_{AB} \angle +120^\circ$$

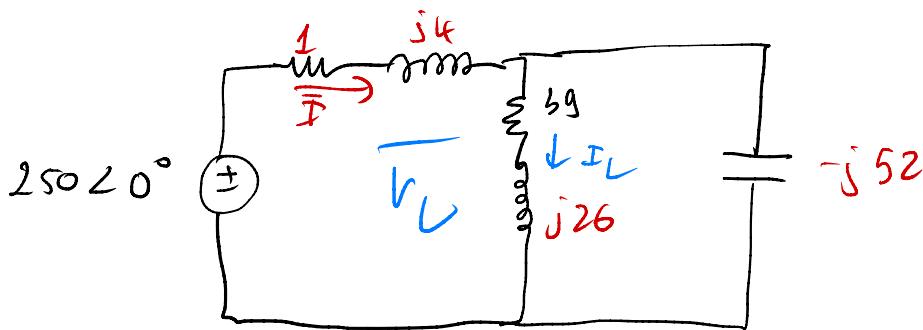
$$\overline{V}_{ab} = \sqrt{3} \overline{V}_{an} \angle +90^\circ$$

Line Voltage
(source)

$$\overline{V}_{bc} = \overline{V}_{ab} \angle -120^\circ$$

$$\overline{V}_{ca} = \overline{V}_{ab} \angle +120^\circ$$

$$P = 3 \times |V_{AN}| |I_{AN}| \cos(\varphi_v - \varphi_I)$$



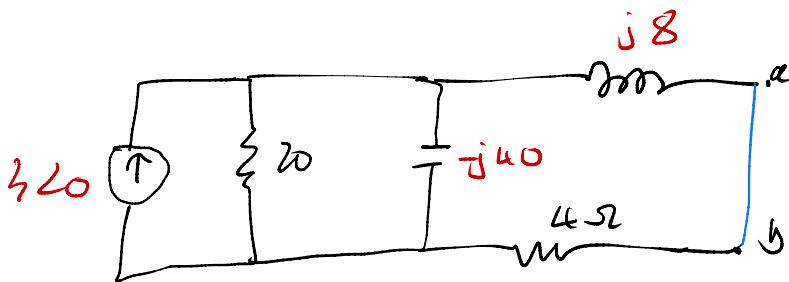
a) $\bar{V}_L = ?$, $\bar{I}_L = ?$

b) P and Q absorbed by $\bar{z} = 39 + j26$

c) " " by $\bar{z} = 1 + j4$

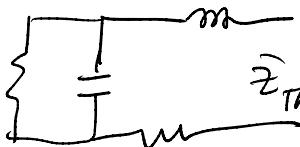
d) " delivered by the source !

$$\bar{I} = \frac{250\angle 0^\circ}{1 + j4 + (39 + j26) \parallel (-j52)} = 4.85\angle 18.08^\circ \text{ A rms}$$

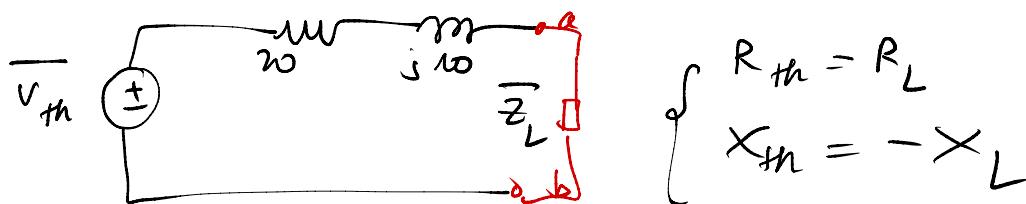


$$a) \bar{V}_{th} = 3\angle 20^\circ (20\parallel -j40) = 53.67 \angle -26.57^\circ$$

$$\bar{Z}_{th} =$$



$$\begin{aligned} \bar{Z}_{th} &= j18 + (20\parallel -j40) + 4 \\ &= 20 + j10 = 22.36 \angle 26.57^\circ \end{aligned}$$



$$\bar{Z}_{ab} = 20 - j10 \rightarrow \text{Max power khi thuan tro'}$$

$$b) \text{Avg } P = \frac{1}{2} |I|^2 R$$

$$= \frac{1}{2} \left| \frac{53.67}{40} \right|^2 \times 20 = 17.96 \text{ W}$$