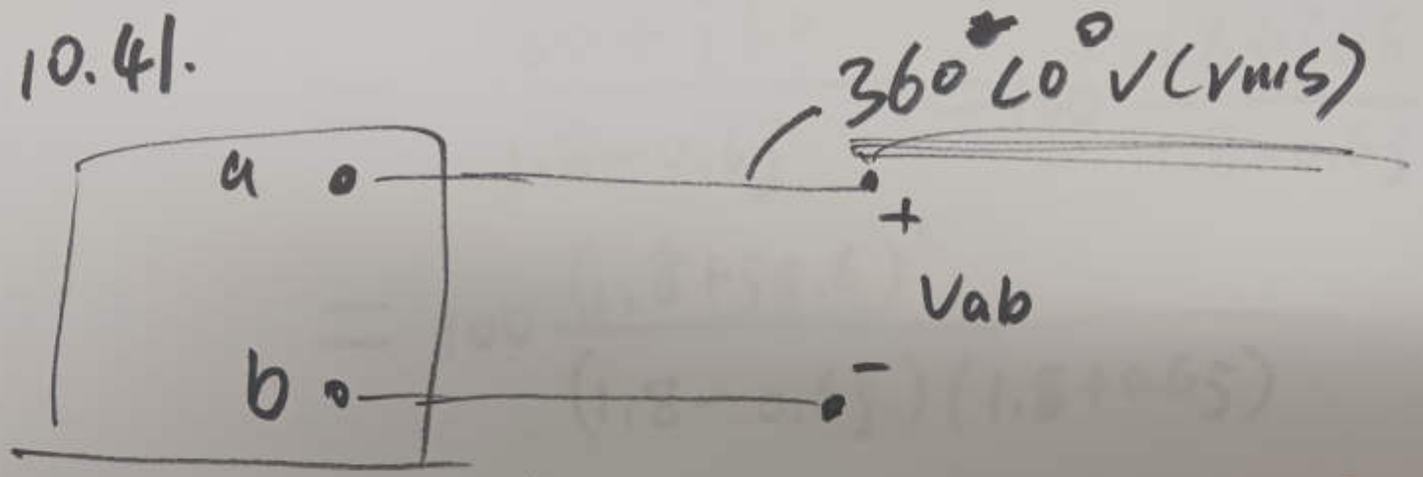
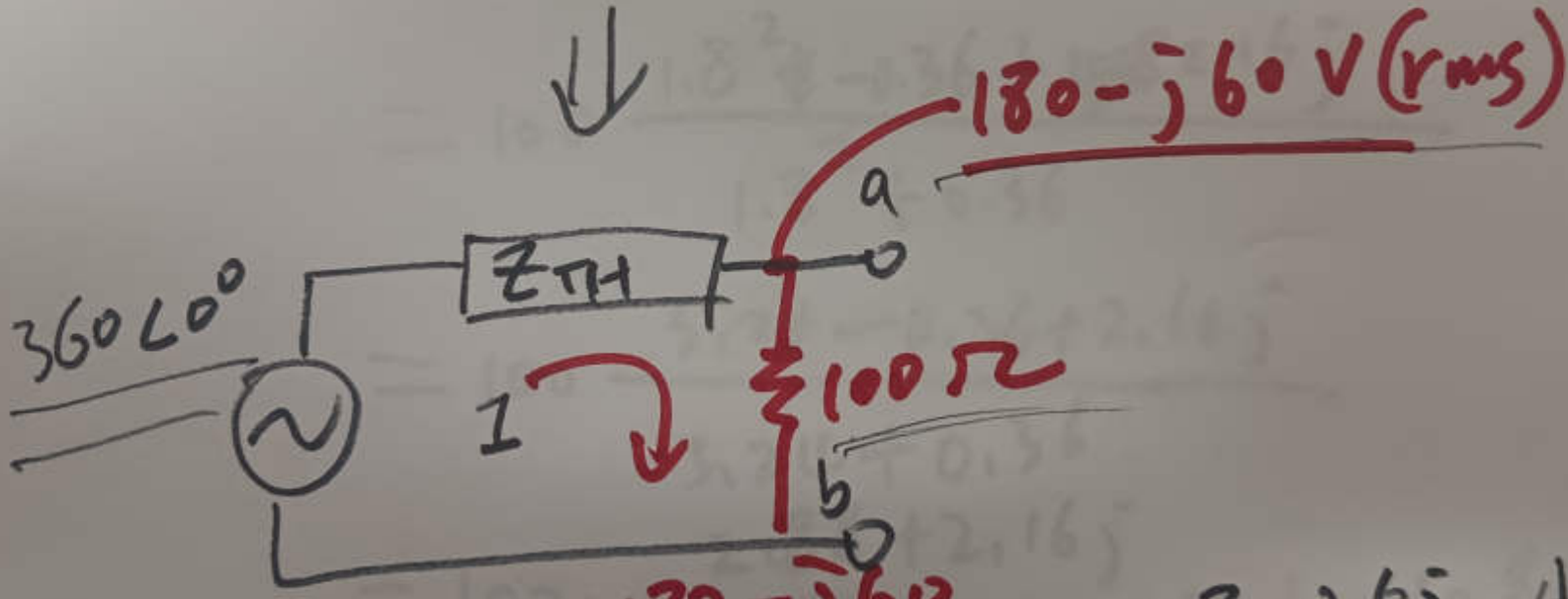
10.41.





$$I = \frac{180 - j60}{100} = 1.8 - 0.6j \text{ A (rms)}$$

$$Z_{TH} = \frac{360\angle 0^\circ - 180 + j60}{I} = \frac{360 - 180 + j60}{1.8 - 0.6j}$$

(1)

$$= \frac{180+j60}{1.8-0.6j} = 100\,\frac{1.8+j0.6}{1.8-0.6j}$$

$$= 100\,\frac{(1.8+j0.6)^2}{(1.8-0.6j)(1.8+0.6j)}$$

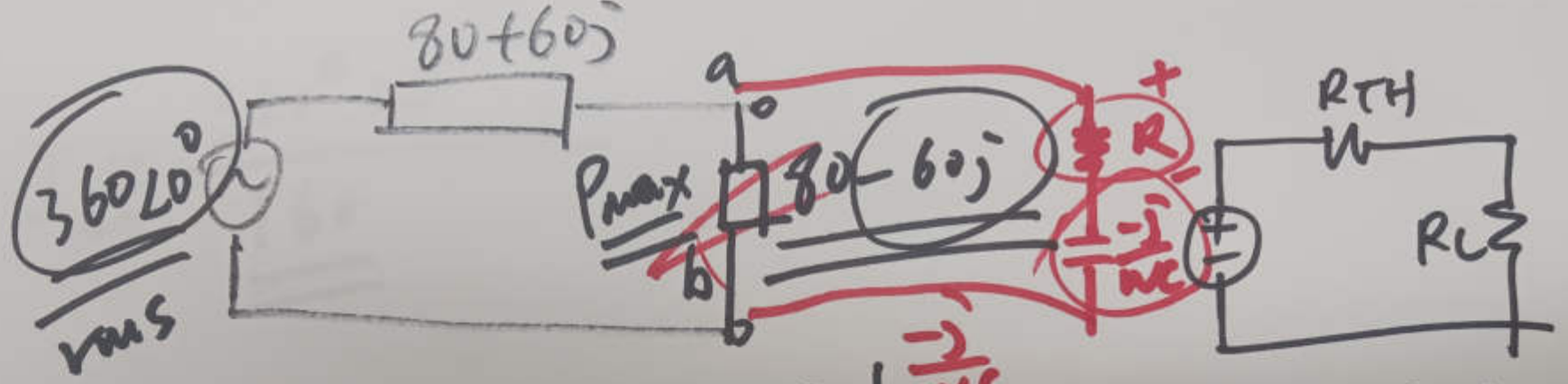
$$= 100\,\frac{1.8^2 - 0.36 + 2.16j}{1.8^2+0.36}$$

$$= 100\,\frac{3.24-0.36+2.16j}{3.24+0.36}$$

$$= 100 \cdot \frac{2.88+2.16j}{3.6} = 100(0.8+0.6j)$$

$$= 80+60j$$

(2)



corrected $\frac{-j}{\omega C}$

$R_L = R_{TH}$

power correction

P_{max}

$$P = \frac{V_m I_m}{2} \underbrace{\cos(\theta_v - \theta_z)}_{0}$$

$$\frac{-j}{\omega C} = -60j \Rightarrow C = 0$$

$$I = \frac{V\angle\theta_V}{R} = \frac{V}{R}\angle\theta_V$$

44μF

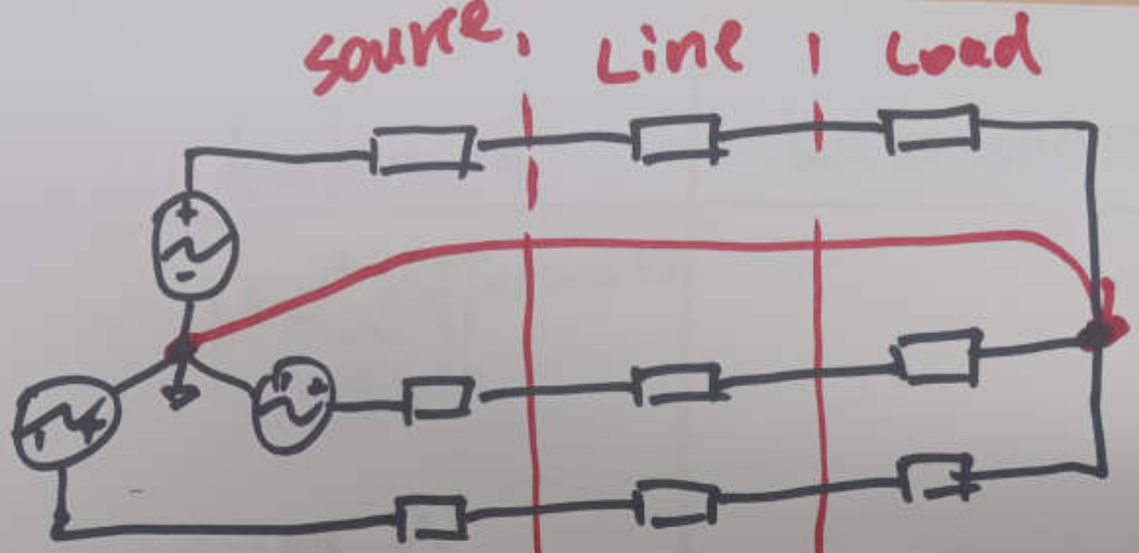
22μF

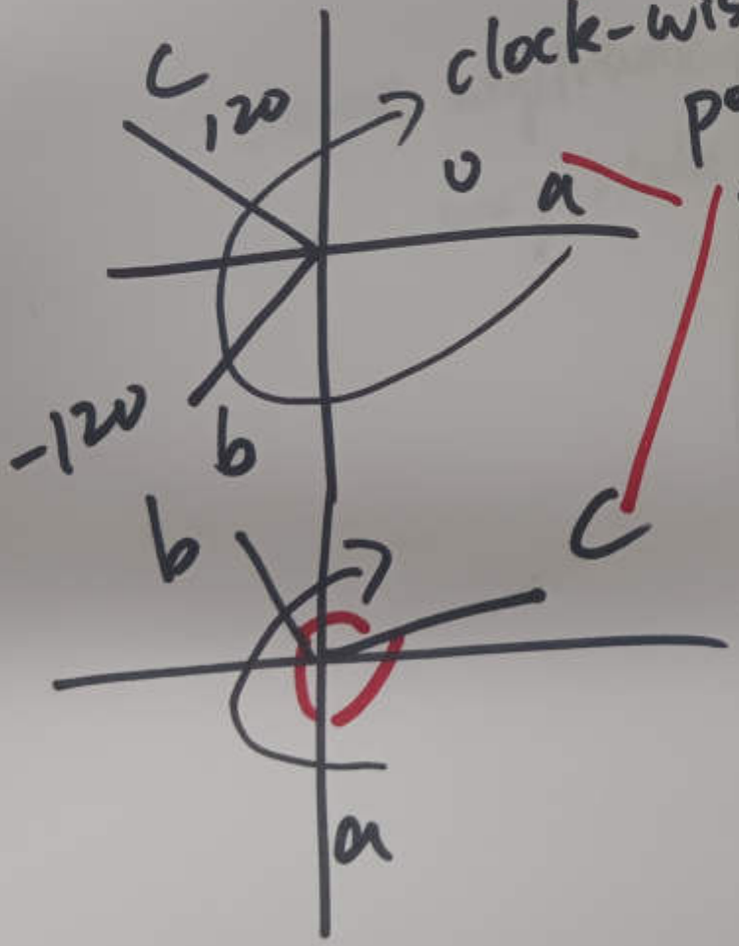
(3)

$$I_{rms} = \frac{360^{\circ} \angle 0^{\circ}}{160}$$

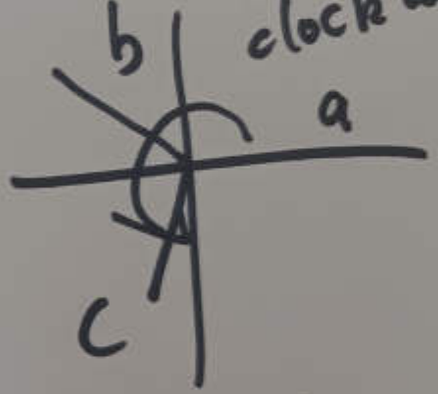
$$P = I_{rms}^{2} \cdot R$$

$$P = \frac{(I_{rms} \cdot R)^{2}}{R}$$





clock-wise
positive phase
sequence



Counter
clock wise

negative
phase
sequence

(5)

balanced	unbalanced
120° ^ difference phase same ω same amplitude magnitude	