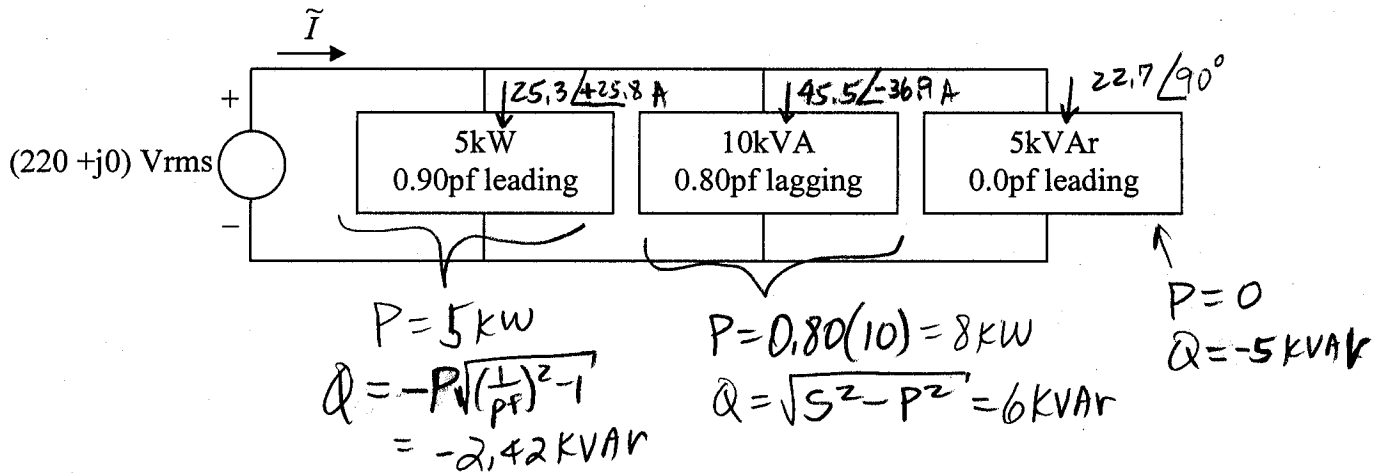


Find \tilde{I} in the circuit shown.

So, the total S_{TOT} is $(5 \text{ kW} + 8 \text{ kW} + 0 \text{ kW})$
 $+ j(-2,42 \text{ KVAR} + 6 \text{ KVAR} - 5 \text{ KVAR})$

$$S_{\text{TOT}} = 13 \text{ kW} - j1,42 \text{ KVAR} = 13,08 \angle -6,23^\circ \text{ KVA}$$

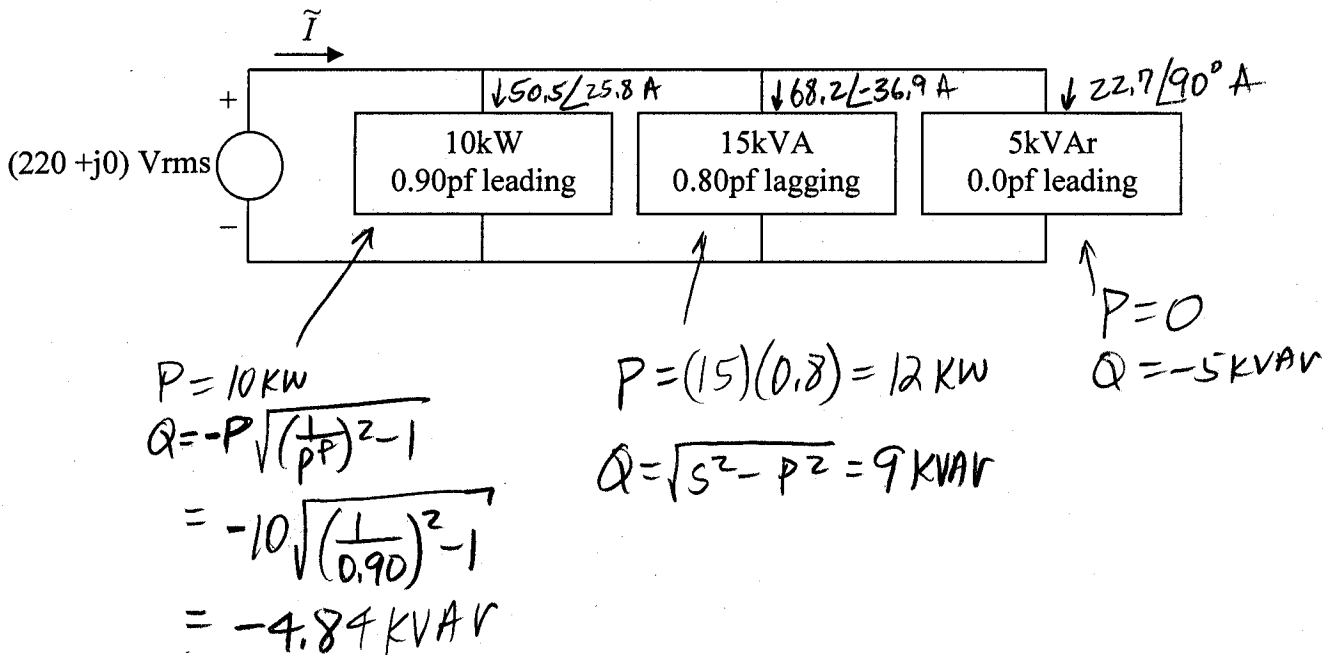
$$S_{\text{TOT}} = V \tilde{I}^*, \quad \tilde{I} = \frac{S_{\text{TOT}}^*}{V^*} = \frac{13080 \angle 6,23^\circ}{220 \angle 0} = 59,5 \angle 6,23^\circ \text{ A}$$

Also, to check

$$\frac{25,3 \angle 25,8^\circ \text{ A}}{22,8 + j11,01} + \frac{45,5 \angle -36,9^\circ \text{ A}}{36,4 - j27,3} + \frac{22,7 \angle 90^\circ \text{ A}}{j22,7}$$

$$= 59,2 + j6,41$$

$$= 59,5 \angle 6,18^\circ$$

Find \tilde{I} in the circuit shown.

$$S_{\text{TOT}} = (10 \text{ kW} + 12 \text{ kW} + 0 \text{ kW}) + j(-4.84 \text{ kVAR} + 9 \text{ kVAR} - 5 \text{ kVAR})$$

$$= 22 \text{ kW} - 0.84 \text{ kVAR} = 22.0 \angle -2.19^\circ \text{ KVA}$$

$$S_{\text{TOT}} = V I^*, \quad I = \frac{S_{\text{TOT}}^*}{V^*} = \frac{22000 \angle 2.19^\circ}{220} = \underline{100 \angle 2.19^\circ}$$

AMPS

Check

$$50.5 \angle 25.8^\circ \text{ A} + 68.2 \angle -36.9^\circ \text{ A} + 22.7 \angle 90^\circ \text{ A}$$

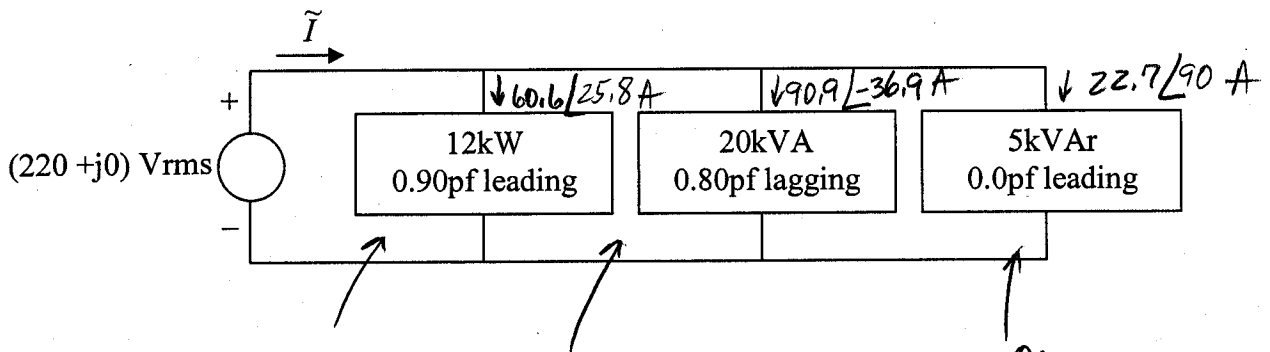
Amp total

$$45.5 + j22.0 + 54.5 - j40.9 + j22.7$$

$$= 100.0 + j3.80$$

$$= 100.0 \angle 2.18^\circ \text{ A}$$

Find \tilde{I} in the circuit shown.



$$P = 12 \text{ kW}$$

$$Q = -P \sqrt{\left(\frac{1}{\text{pf}}\right)^2 - 1}$$

$$= -12 \sqrt{\left(\frac{1}{0.9}\right)^2 - 1}$$

$$= -5.81 \text{ kVAR}$$

$$P = (20 \text{ kVA})(0.8) = 16 \text{ kW}$$

$$Q = \sqrt{S^2 - P^2} = 12 \text{ kVAR}$$

$$0 \text{ kW}$$

$$-5 \text{ kVAR}$$

$$S_{\text{TOT}} = (12 \text{ kW} + 16 \text{ kW} + 0 \text{ kW}) + j(-5.81 \text{ kVAR} + 12 \text{ kVAR} - 5 \text{ kVAR})$$

$$= 28 \text{ kW} + j10.19 \text{ kVAR} = 28.0 \angle 2.43^\circ \text{ kVA}$$

$$S_{\text{TOT}} = V \tilde{I}^*, \quad \tilde{I} = \frac{S_{\text{TOT}}^*}{V^*} = \frac{28000 \angle -2.43 \text{ VA}}{220 \angle 0}$$

$$\tilde{I} = 127.3 \angle -2.43 \text{ A}$$

Check
Current
Sum

$$60.6 \angle 25.8 + 90.9 \angle -36.9 + 22.7 \angle 90$$

$$54.6 + j26.4 + 72.7 - j59.6 + j22.7$$

$$= 127.3 - j5.50$$

$$= 127.4 \angle -2.47 \text{ A}$$