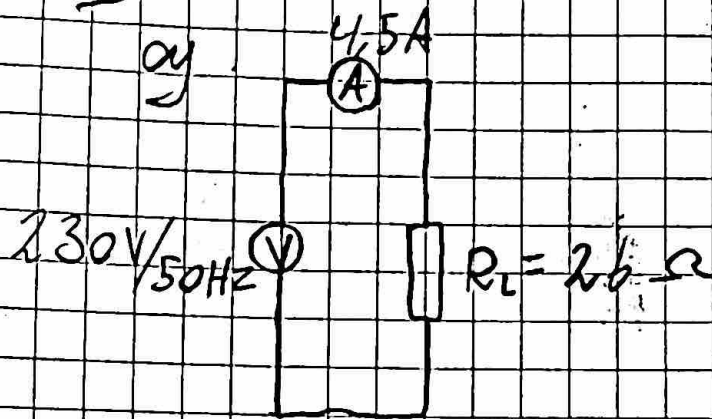


Day 3 GA

3b)



$$b) P = I_R^2 R \quad P = 4,5^2 \cdot 26 = 526,5 \text{ W}$$

$$P = U \cdot I \cdot \cos \phi$$

$$\cos \phi = \frac{P}{U \cdot I} = \frac{526,5}{230 \cdot 4,5} = 0,50$$

$$\angle \phi = 60^\circ$$

c)

$$P = 230 \cdot 4,5 \cdot \cos(60) = 517,5 \text{ W}$$

$$Q = 230 \cdot 4,5 \cdot \sin(60) = 896,33 \text{ VAR}$$

d)

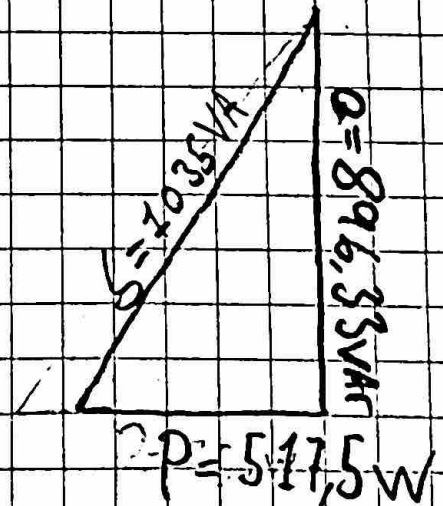
$$I_{cm} = 250 \text{ W}$$

e)

$$S = \sqrt{P^2 + Q^2}$$

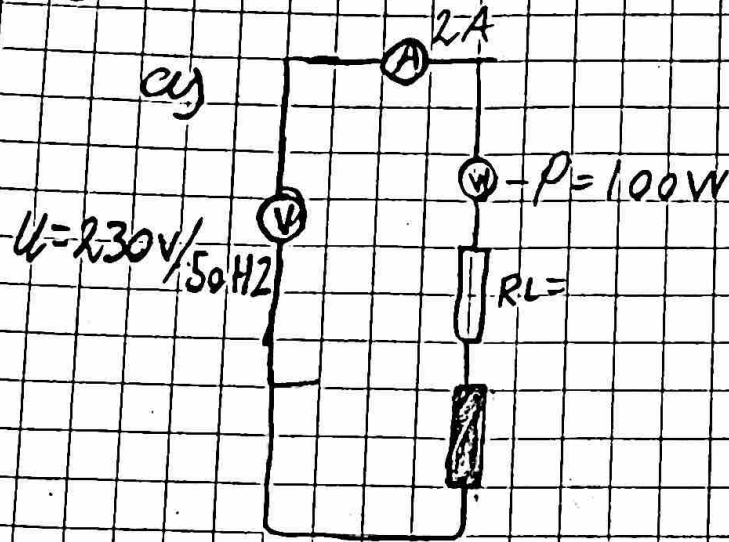
$$S = \sqrt{517,5^2 + 896,33^2}$$

$$S = 1034,99$$



RAF3

37



b) $\cos \phi = \frac{P}{S} = \frac{100}{230 \cdot 2} = 0,217$

$\phi = 77,44^\circ$

c)

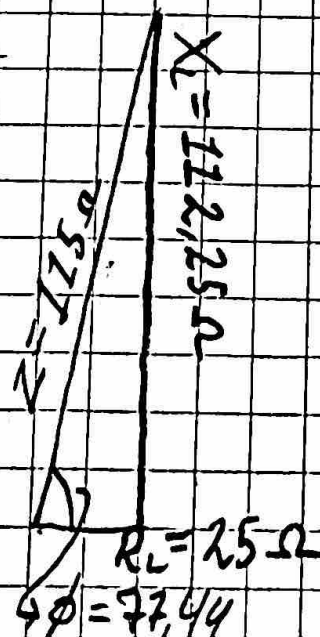
$Z = \frac{U}{I} = \frac{230}{2} = 115 \Omega$

d)

$R = Z \cdot \cos \phi = 115 \cdot \cos(77,44) = 25 \Omega$

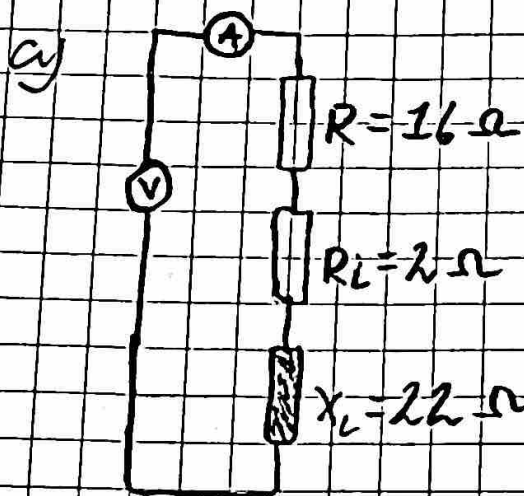
$X_L = Z \cdot \sin \phi = 115 \cdot \sin(77,44) = 112,25 \Omega$

$Z_{cm} = 25 \Omega$



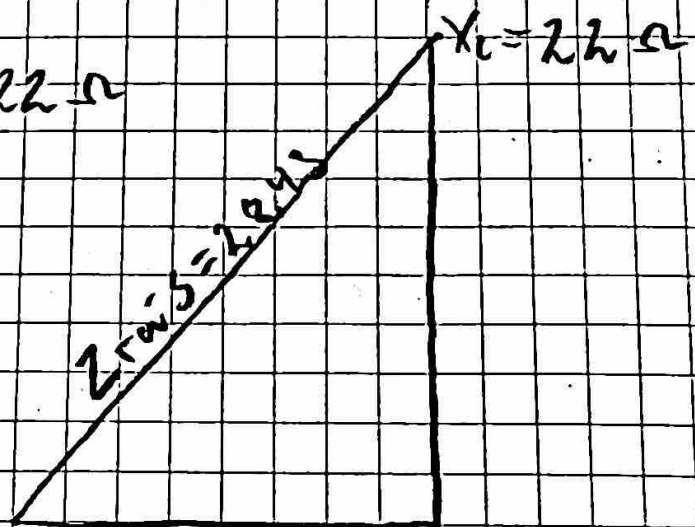
RAF3

39)



b)

$$I_{cm} = 4 \text{ A}$$



$$Z_L = \sqrt{R_L^2 + X_L^2} = \sqrt{2^2 + 22^2} \quad R = 16 \Omega$$

$$Z_L = 22,09$$

$$Z_{R+L} = \sqrt{R^2 + X_L^2} = \sqrt{(16+2)^2 + 22^2} =$$

$$Z_{R+L} = 28,43 \Omega$$

RAF3

39)

$$e) I_h = \frac{U_h}{Z_{R_{\text{eff}}}} = \frac{230}{28,43} = \underline{\underline{8,09 A}}$$

$$d) \cos \phi_L = \frac{R_L}{Z_L} = \frac{2}{22,1} = 0,0905$$

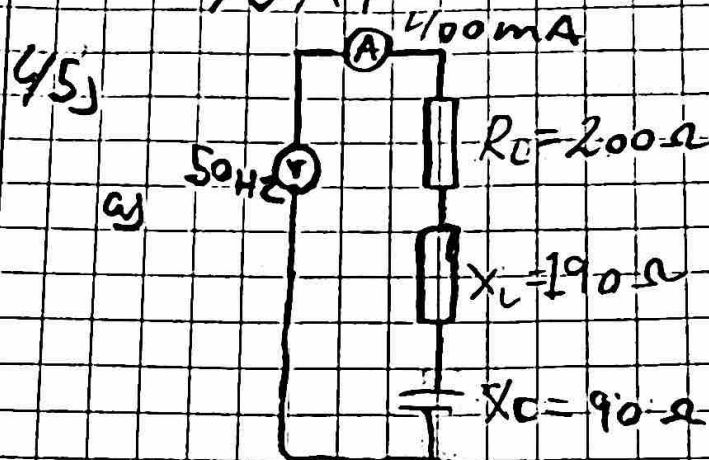
$$\cos \phi_{R_{\text{eff}}} = \frac{R_h}{Z_{R_{\text{eff}}}} = \frac{(2+16)}{28,43} \quad \angle \phi_h = 84,1^\circ$$

$$\cos \phi = 0,633$$

$$\angle \phi = 50,72^\circ$$

$$e) P = \frac{U^2}{R} = \frac{230^2}{18} = \underline{\underline{2939 W}}$$

RAF3



b)

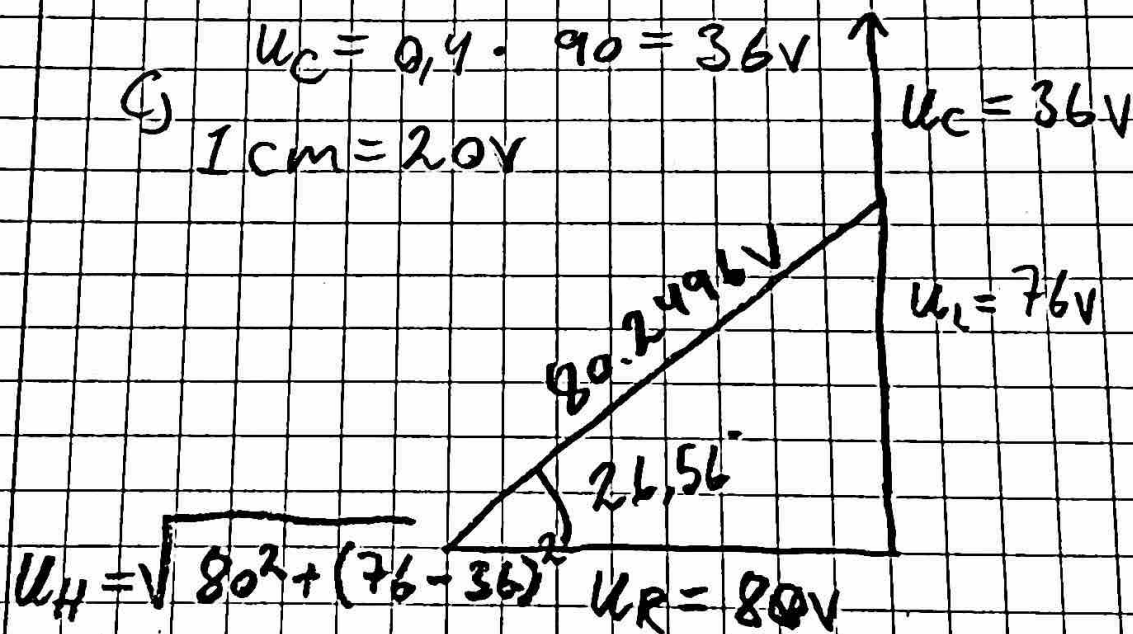
$$U_R = 0,4 \cdot 200 = 80V$$

$$U_L = 0,4 \cdot 190 = 76V$$

$$U_C = 0,4 \cdot 90 = 36V$$

c)

$$I_{cm} = 20V$$



$$U_H = \sqrt{80^2 + (76 - 36)^2}$$

$$U_H = 89,4427$$

$$\cos \phi = \frac{80}{89,4427} = 0,8944$$

$$\angle \phi = 26,56^\circ$$