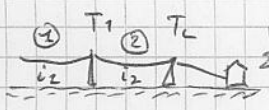
12.55



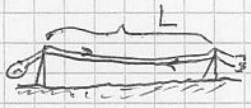
⚠ il n'y a qu'un seul utilisateur !

La puissance électrique est conservée : $P_1 = U_1 \cdot i_1 = 230 \cdot 32.29 \cdot i_1 \simeq \underline{10'245{,}12\ W} = P_{maison}$

(entre T_1 et T_2)

12.56

$P_{fournie} = 1{,}2 \cdot 10^6\ W = U_{alim} \cdot I_{fils}$



$R = 5 \cdot 10^{-2}\ \frac{\Omega}{km}$

$\Rightarrow R_{Totale} = 2 \cdot R \cdot L$

a) $P_{perdue} = R_{Totale} \cdot I^2 = R_{Totale} \cdot \left(\frac{P_{fournie}}{U_{alim}}\right)^2 = \underline{7 \cdot 10^5\ W}$

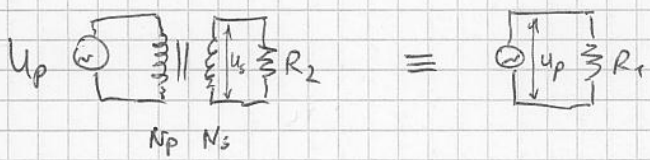
b) $P_{fournie} = U_1 I_1 = U_2 I_2 = 1{,}2 \cdot 10^6\ W$

(U_1 = 12'000 V)

$\Rightarrow \frac{U_2}{U_1} = 100 \quad \Rightarrow U_2 = 100 \cdot U_1 = 1200'000\ V = U_{alim}$

$\Rightarrow P_{perdue} = R_{Totale} \cdot \left(\frac{P_{fournie}}{U_{alim}}\right)^2 = 2 \cdot 5 \cdot 10^{-2} \cdot 7 \cdot \left(\frac{1{,}2 \cdot 10^6}{1200'000}\right)^2 = \underline{\underline{70\ W}}$

12.57



$\equiv$

- $\frac{U_s}{U_p} = \frac{N_s}{N_p}$
- $P = U_s i_2 = \frac{U_s^2}{R_2} = \frac{U_p^2}{R_1} \Rightarrow \left(\frac{U_s}{U_p}\right)^2 = \frac{R_2}{R_1}$

$\Rightarrow \frac{R_2}{R_1} = \left(\frac{N_s}{N_p}\right)^2 \Rightarrow R_1 = R_2 \left(\frac{N_p}{N_s}\right)^2$