

$$Q_H = Q_{32} + Q_{23}$$

$$Q_X = Q_{12}$$

$$4P_0 V = \nu R T_1$$

$$P_0 V = \nu R T_2$$

$$P_0 V_0 = \nu R T_3$$

$$Q_H = \frac{7}{2} \nu R (T_3 + T_2)$$

$$Q_X = \nu R T_2$$

$$Q_H = \frac{7}{2} \nu R \left(\left(\frac{4P_0 V}{\nu R} - \frac{4P_0 V_0}{\nu R} \right) + \left(\frac{P_0 V_0}{\nu R} - \frac{P_0 V}{\nu R} \right) \right) = \frac{7}{2} \nu R \frac{-3P_0 V + P_0 V_0 - P_0 V}{\nu R}$$

$$Q_H = \frac{7}{2} \nu R (P_0 V_0 - 4V)$$

$$Q_X = \nu R \left(\frac{4P_0 V}{\nu R} - \frac{4P_0 V_0}{\nu R} \right) = \nu R \frac{P_0 (3V - V_0)}{\nu R}$$

$$Q_X = P_0 (3V - V_0)$$

$$\eta = \left(1 - \frac{P_0 (3V - V_0)}{4P_0 (2V - V_0)} \right) = 1 - \frac{3V - V_0}{4(2V - V_0)} = 0,71$$

$$\eta = 71\%$$

$$\eta = 71\%$$

3. Дано

$$R_1 = 8 \text{ см}$$

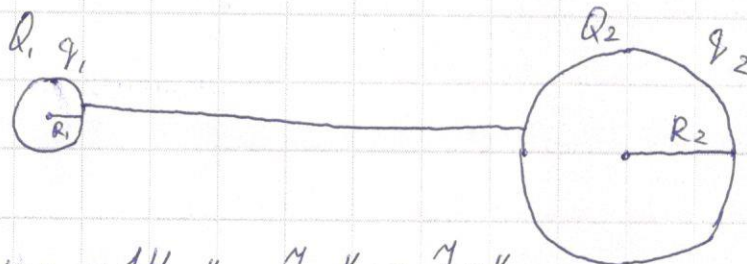
$$R_2 = 20 \text{ см}$$

$$q_1 = 14 \text{ нКл}$$

$$q_2 = -7 \text{ нКл}$$

$$Q_1 = ?$$

$$Q_2 = ?$$



$$q_1 + q_2 = 14 \text{ нКл} - 7 \text{ нКл} = 7 \text{ нКл}$$

$$Q_1 + Q_2 = q_1 + q_2$$

$$\frac{R_1}{R_2} = \frac{Q_1}{Q_2}$$

$$Q_1 = \frac{R_1}{R_2} Q_2$$

$$Q_2 \left(\frac{R_1}{R_2} + 1 \right) = q_1 + q_2 \Rightarrow Q_2 = \frac{(q_1 + q_2) R_2}{R_1 + R_2}$$

$$Q_2 = 5 \text{ нКл} \quad Q_1 = 2 \text{ нКл}$$