

1a.

$$U = U_0 - R_i \cdot I$$

$$\underline{U = R \cdot I}$$

$$\underline{R \cdot I = U_0 - R_i \cdot I}$$

$$\underline{I = U_0 / (R + R_i) = 35 / (50 + 1,5) = 0,68 \text{ A}}$$

$$\underline{U = R \cdot I = 50 \cdot 0,68 = 34 \text{ V}}$$

1b.

$$\underline{I = U_0 / (R + R_i) = 35 / (5 + 1,5) = 5,385 \text{ A}}$$

$$\underline{U = R \cdot I = 5 \cdot 5,385 = 26,92 \text{ V}}$$

1c.

$$\underline{I_k = U_0 / R_i = 35 / 1,5 = 23,3 \text{ A}}$$

2.

$$\underline{R_i = 3,5 \text{ ohm}, R = 15 \text{ ohm}, U = 52 \text{ V}, U_0 = ?}$$

$$\underline{I = U / R = 52 / 15 = 3,47 \text{ A}}$$

$$U_0 = U + R \cdot I = 52 + 15 \cdot 3,47 = 104,05 \text{ V}$$

3.

$$\underline{R = 35 \text{ ohm}, U = 50 \text{ V}, I_k = 8,5 \text{ A}}$$

$$\underline{I = U / R = 50 / 35 = 1,43 \text{ A}}$$

$$U_0 = R_i \cdot I_k$$

$$\underline{U_0 = U + R_i \cdot I}$$

$$\underline{R_i \cdot I_k = U + R_i \cdot I}$$

$$\underline{R_i = U / (I_k - I) = 50 / (8,5 - 1,43) = 7,07 \text{ ohm}}$$

$$\underline{U_0 = R_i \cdot I_k = 7,07 \cdot 8,5 = 60,11 \text{ V}}$$

4.

$$\underline{U_1 = 70 \text{ V}, R_1 = 50 \text{ ohm}, R_2 = 5 \text{ ohm}, U_2 = 0,85 \cdot U_1 = 0,85 \cdot 70 = 59,5 \text{ V}}$$

$$I_1 = U_1 / R_1 = 70 / 50 = 1,4 \text{ A}$$

$$\underline{I_2 = U_2 / R_2 = 59,5 / 5 = 11,9 \text{ A}}$$

$$U_0 = U_1 + R_i \cdot I_1$$

$$\underline{U_0 = U_2 + R_i \cdot I_2}$$

$$\underline{U_1 + R_i \cdot I_1 = U_2 + R_i \cdot I_2}$$

$$\underline{R_i = (U_2 - U_1) / (I_1 - I_2) = (59,5 - 70) / (1,4 - 11,9) = 1 \text{ ohm}}$$

$$\underline{U_0 = U_1 + R_i \cdot I_1 = 70 + 1 \cdot 1,4 = 71,4 \text{ V}}$$

kontrola

$$\underline{U_0 = U_2 + R_i \cdot I_2 = 59,5 + 1 \cdot 11,9 = 71,4 \text{ V}}$$