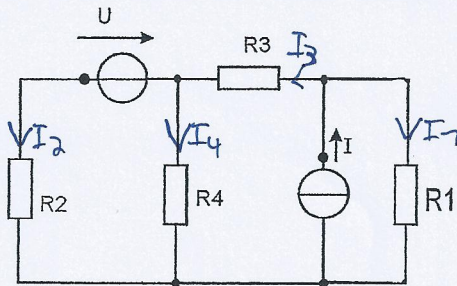
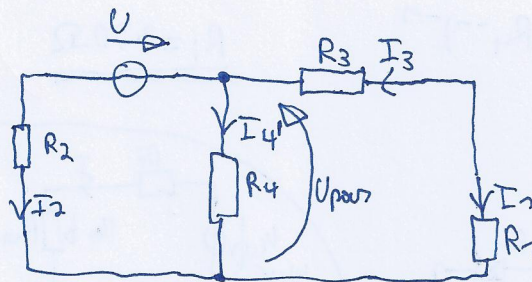


1) Berechnen Sie den Strom durch den Widerstand R_4 ! (Überlagerungsprinzip)
 $R_1 = 1k\Omega$, $R_2 = 2k\Omega$, $R_3 = 100\Omega$, $R_4 = 1k\Omega$, $U = 15V$, $I = 10mA$



1

1) mit U_0



$$R_{ges} = R_2 + (R_4^{-1} + (R_3 + R_1)^{-1})^{-1}$$

$$R_{ges} = 2,52 k\Omega$$

$$I_2 = \frac{U}{R_{ges}}$$

$$I_2 = 5,95 mA$$

$$R_{par} = (R_4^{-1} + (R_3 + R_1)^{-1})^{-1}$$

$$R_{par} = 523,8 \Omega$$

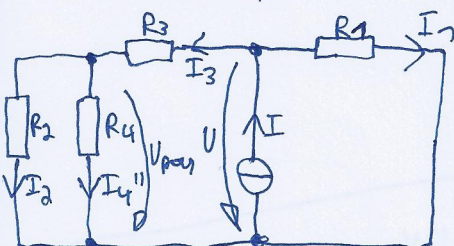
$$U_{par} = R_{par} \cdot I_2$$

$$U_{par} = 3,1 V$$

$$I_4' = - \frac{U_{par}}{R_4}$$

$$I_4' = -3,1 mA$$

2) mit I_0



~~$$R_{ges} = R_3 + (R_2^{-1} + (R_4^{-1} + (R_1^{-1} + R_3^{-1})^{-1})^{-1})^{-1}$$~~

~~$$R_{ges} =$$~~

$$R_{ser} = R_3 + (R_2^{-1} + R_4^{-1})^{-1}$$

$$R_{ser} = 766,7 \Omega$$

$$R_{ges} = (R_{ser}^{-1} + R_1^{-1})^{-1}$$

$$R_{ges} = 493,97 \Omega$$

$$U = R_{ges} \cdot I$$

$$U = 4,3 V$$

$$I_3 = \frac{U}{R_{ser}}$$

$$I_3 = 5,6 mA$$

$$U_{par} = I_3 \cdot R_{par}$$

$$U_{par} = 3,73 V$$

$$I_4'' = \frac{U_{par}}{R_4}$$

$$I_4'' = 3,73 mA$$

Überlagerung:

$$I_4 = I_4' + I_4''$$

$$I_4 = 630 \mu A$$