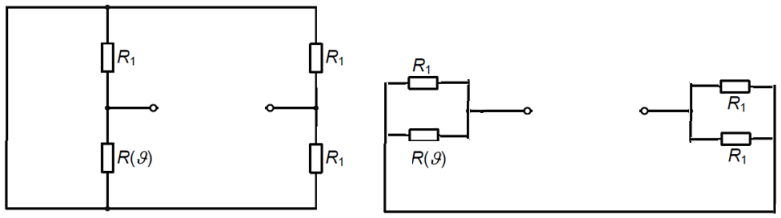
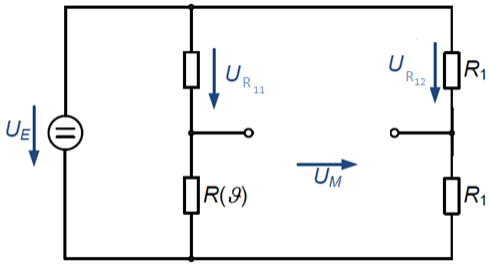
Aufgabe 1 - Folien



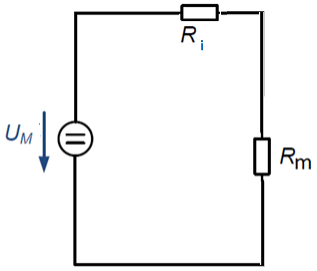
$R_i = (R_1||R_1) + (R_1||R(\vartheta)) = \frac{R_1}{2} + \frac{R_1 \cdot R(\vartheta)}{R_1 + R(\vartheta)}$

Fr die Spannung U_M gilt:



$U_M = -U_{R_{11}} + U_{R_{12}}$

Aus Spannungsteilerregel folgt: $U_{R_{11}} = U_E \cdot \frac{R_1}{R_1 + R(\vartheta)}$ und $U_{R_{12}} = \frac{U_E}{2}$
$\rightarrow U_M = U_E \cdot (\frac{1}{2} - \frac{R_1}{R_1 + R(\vartheta)})$



b)
$R(30) = 2k\Omega \rightarrow U_M = U_E \cdot (\frac{1}{2} - \frac{1}{3}) = 4V$
$R_i = 500\Omega + \frac{2000}{3} = 1166.7\Omega$
$Spannungber R_m : Spannungsteiler \rightarrow U_M \frac{R(m)}{R_m + R_i} = 3.995V$