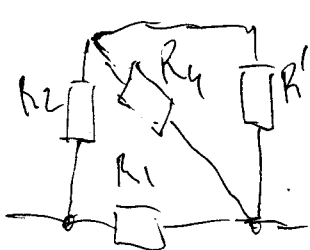
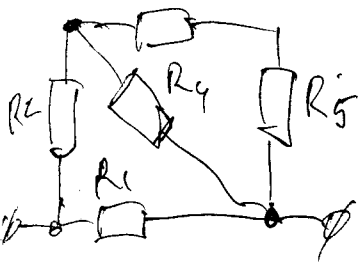
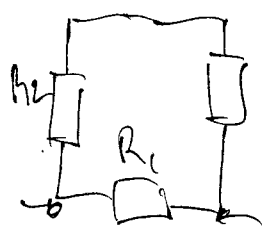


1) $R = 1 \text{ Ohm}$

$R' = R_3 + R_5 = 2 \text{ Ohm}$



$R^2 = \frac{R' \cdot R_4}{R' + R_4} = \frac{2 \cdot 1}{3} = 0,66 \text{ Ohm}$

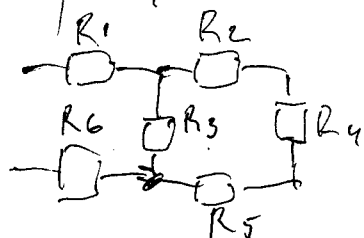


$R^3 = R^2 + R_2 = 0,66 + 1 = 1,66 \text{ Ohm}$

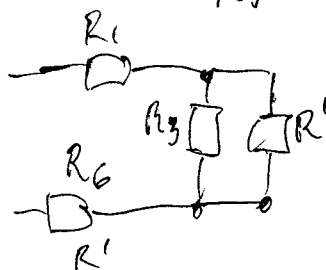


$R_{\text{total}} = \frac{R^3 \cdot R_1}{R^3 + R_1} = \frac{1,66 \cdot 1}{1,66 + 1} = \frac{1,66}{2,66} = 0,62 \text{ Ohm}$

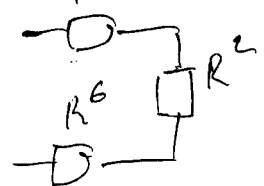
2) $R_1 = R_2 = R_5 = R_6 = 30 \text{ Ohm}$ $R_4 = 24 \text{ Ohm}$ $R_3 = 20 \text{ Ohm}$



$R' = R_2 + R_4 + R_5 = 3 + 24 + 3 = 30 \text{ Ohm}$

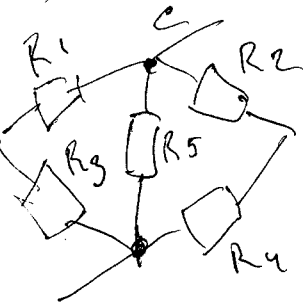


$R^2 = \frac{R_3 \cdot R'}{R_3 + R'} = \frac{30 \cdot 20}{30 + 20} = 12 \text{ Ohm}$



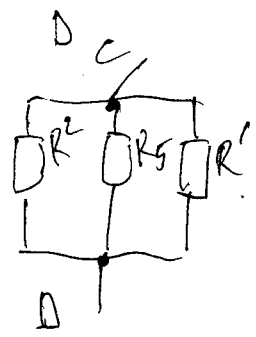
$R_{\text{total}} = R_1 + R^2 + R_6 = 3 + 12 + 3 = 18 \text{ Ohm}$

3) $R_1 = 20 \Omega$ $R_2 = 5 \Omega$ $R_3 = 20 \Omega$ $R_4 = 5 \Omega$ $R_5 = 10 \Omega$



$$R' = R_2 + R_4 = 5 + 5 = 10 \Omega$$

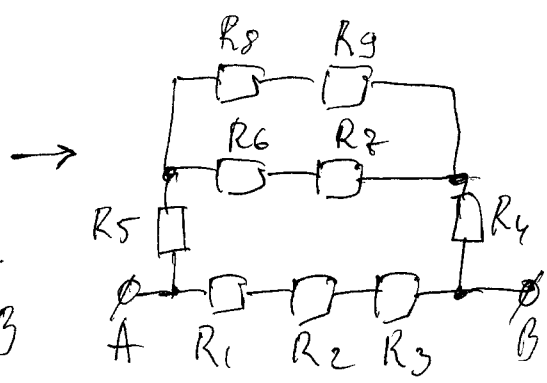
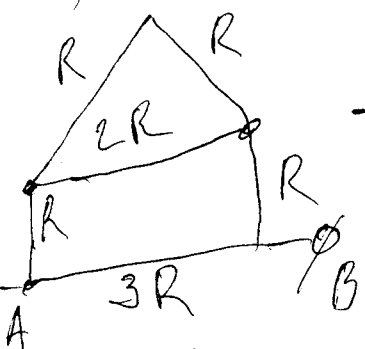
$$R^2 = R_1 + R_3 = 2 + 20 = 22 \Omega$$



~~$$R_{cd} = \frac{R_5 \cdot R' \cdot R^2}{R_5 + R' + R^2} = \frac{10 \cdot 10 \cdot 22}{10 + 10 + 22} =$$~~

$$\frac{1}{R_{cd}} = \frac{1}{R^5} + \frac{1}{R^2} + \frac{1}{R'} = \frac{1}{0,04} + 0,1 + 0,1 = \frac{1}{0,24} = 4,1 \Omega$$

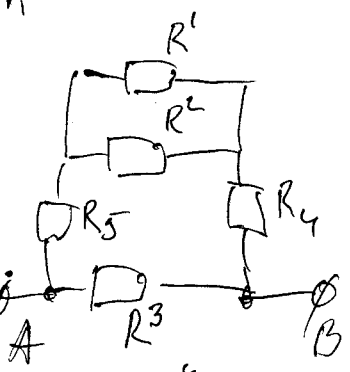
4) $R = 1 \Omega$



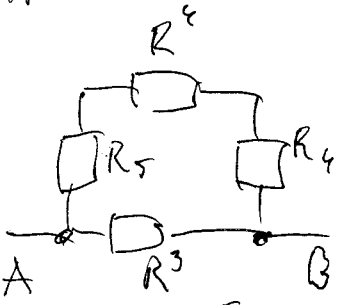
$$R' = R_8 + R_9 = 1 \Omega$$

$$R^2 = R_6 + R_7 = 1 \Omega$$

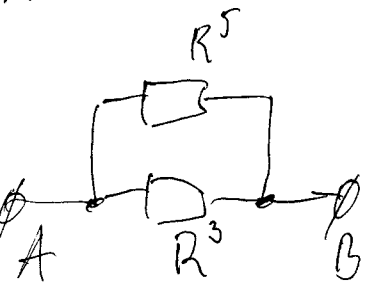
$$R^3 = R_1 + R_2 + R_3 = 3 \Omega$$



$$R^4 = \frac{R' R^2}{R' + R^2} = \frac{1}{1} = 1 \Omega$$



$$R^5 = R_5 + R^4 + R_4 = 1 + 1 + 1 = 3 \Omega$$



$$R_{AB} = \frac{R^5 \cdot R^3}{R^5 + R^3} = \frac{3 \cdot 3}{3 + 3} = \frac{9}{6} = 1,5 \Omega$$