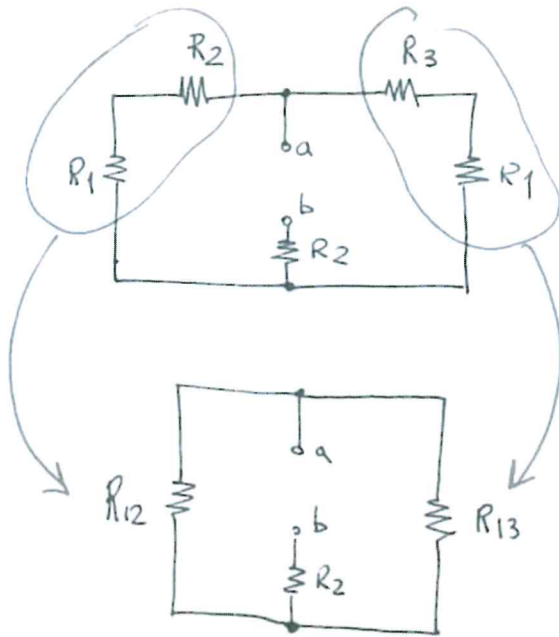


# RESISTENZA EQUIVALENTE



EX1



$$R_1 = 1 \Omega$$

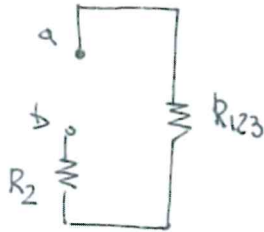
$$R_2 = 2 \Omega$$

$$R_3 = 3 \Omega$$

Determinare la  $R_{eq}$  ai morsetti ab

$$R_{12} = R_1 + R_2 = 3 \Omega$$

$$R_{13} = R_1 + R_3 = 4 \Omega$$

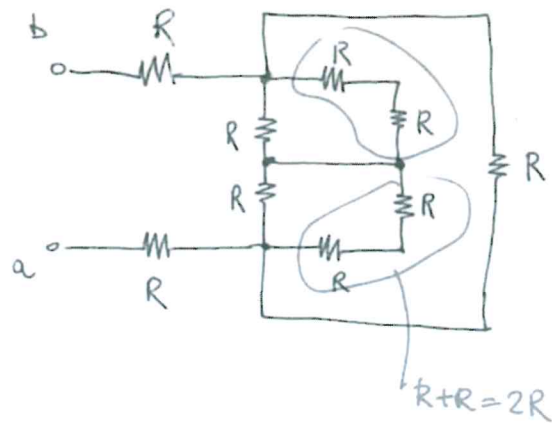


$$R_{123} = R_{12} // R_{13} = \frac{R_{12} R_{13}}{R_{12} + R_{13}} = \frac{3 \cdot 4}{7} = \frac{12}{7} \Omega$$

$$R_{eq} = R_2 + R_{123} = 2 + \frac{12}{7} = \frac{26}{7} \Omega \approx 3,71 \Omega$$

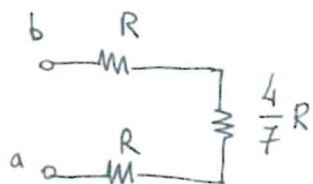
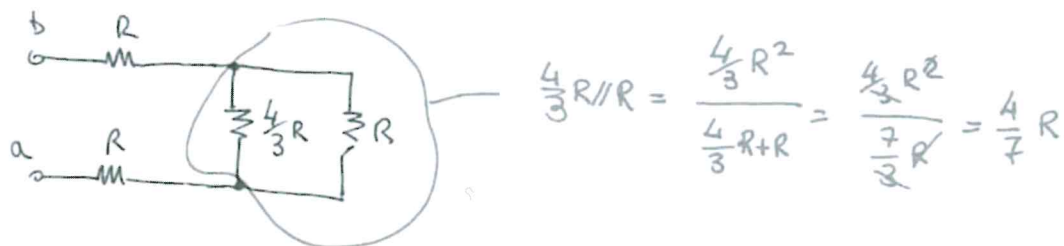
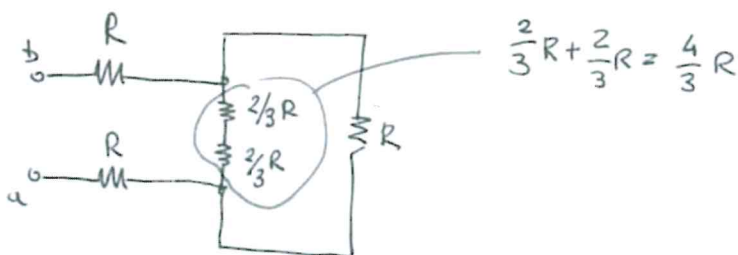
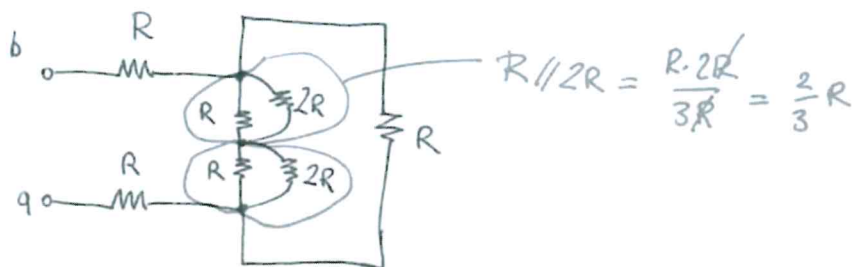
EX

X



$$R=1\Omega$$

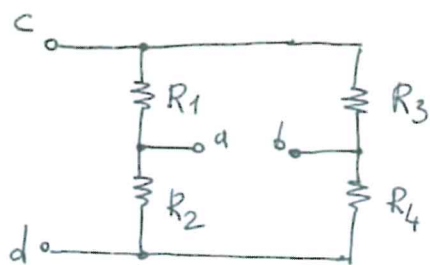
Determinare la  $R_{eq}$  ai morsetti a b



$$R_{eq} = R + R + \frac{4}{7}R = \frac{18}{7}R = \frac{18}{7}\Omega$$

$$\approx 2,57\Omega$$

Ex



$$R_1 = 10 \Omega ; R_2 = 20 \Omega$$

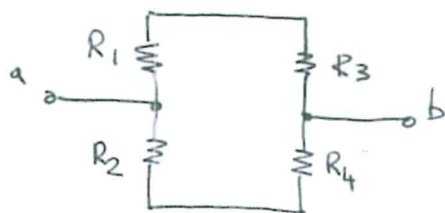
$$R_3 = 15 \Omega , R_4 = 5 \Omega$$

Determinare la resistenza equivalente  $R_{ab}$ , vista ai morsetti a, b nei casi

1) poli c, d aperti.

2) poli c, d chiusi in cortocircuito

1) Poli c, d aperti.

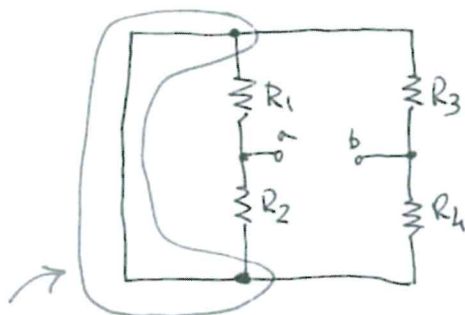


$$R_{13} = R_1 + R_3 = 10 + 15 = 25 \Omega$$

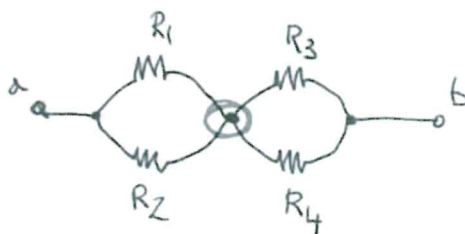
$$R_{24} = R_2 + R_4 = 20 + 5 = 25 \Omega$$

$$R_{ab} = R_{13} // R_{24} = \frac{25}{2} = 12,5 \Omega$$

2) Poli c, d in cortocircuito



POSSIAMO  
RIDURLO AD UN NODO

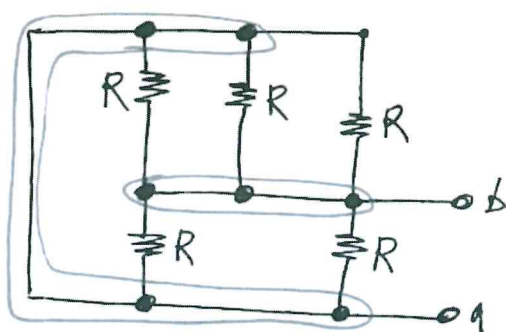


$$R_{12} = R_1 // R_2 = \frac{R_1 R_2}{R_1 + R_2} = \frac{10 \cdot 20}{30} = \frac{20}{3} \Omega$$

$$R_{34} = R_3 // R_4 = \frac{R_3 R_4}{R_3 + R_4} = \frac{15 \cdot 5}{20} = \frac{15}{4} \Omega$$

$$R_{ab} = R_{12} + R_{34} = \frac{20}{3} + \frac{15}{4} = \frac{80 + 45}{12} = \frac{125}{12} \approx 10,42 \Omega$$

EX

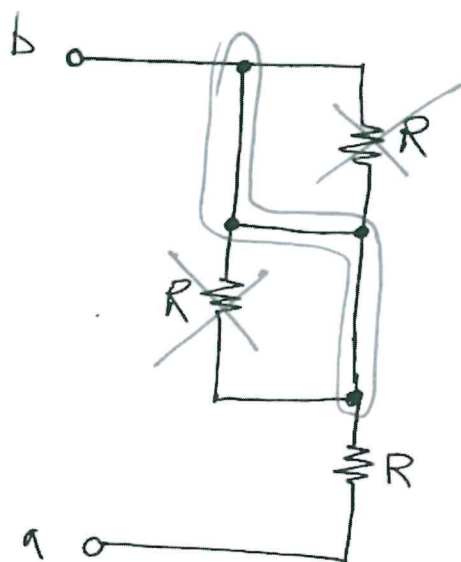


Det. la resistenza eq.  
vista ai morsetti a, b

Due soli nodi a, b : tutte le R sono in //

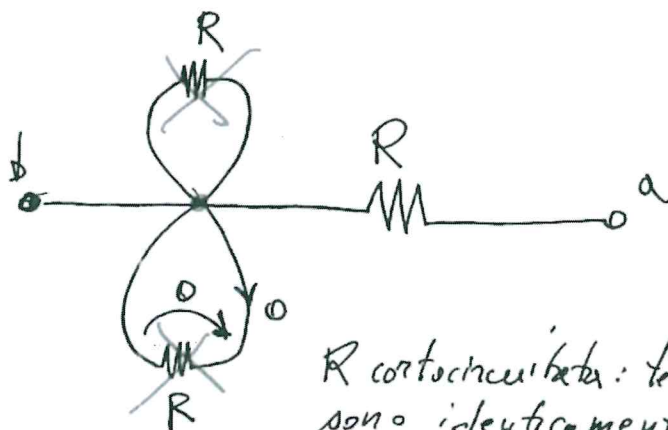
$$R_{eq} = \frac{1}{\sum_{i=1}^5 \frac{1}{R}} = \frac{R}{5}$$

EX



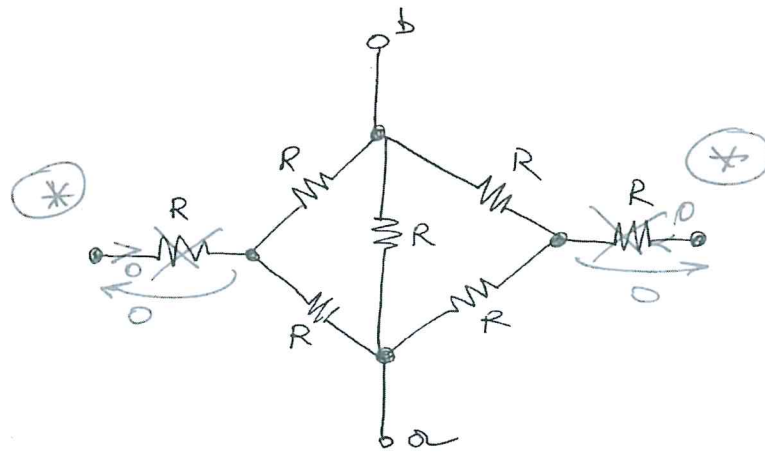
Det. la resistenza eq.  
vista ai morsetti a, b

$$R_{eq} = R$$



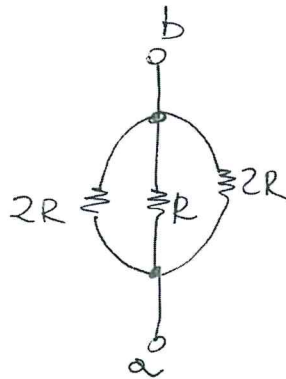
R cortocircuitata: tensione e corrente  
sono identicamente nulle

EX



Determinare la resistenza equivalente  $R_{eq}$  vista ai morsetti a, b

(\*) Ci sono due resistori aperti, percorsi da corrente nulla identicamente  
 $\rightarrow$  tensione nulla  $\rightarrow$  non danno contributo alla resistenza  
 equivalente vista ai morsetti a, b



$$R_{eq} = \frac{1}{\frac{1}{2R} + \frac{1}{R} + \frac{1}{2R}} =$$

$$= \frac{1}{\frac{4}{2R}} = \frac{R}{2}$$