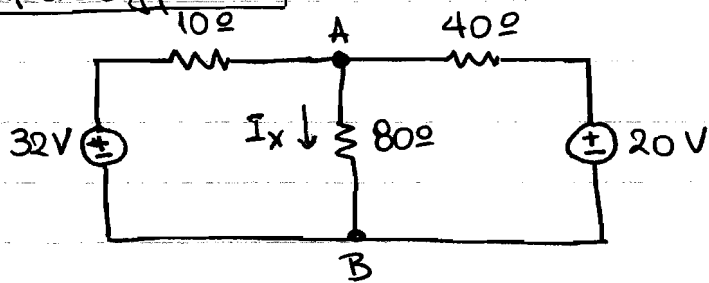


## Παράδειγμα 1

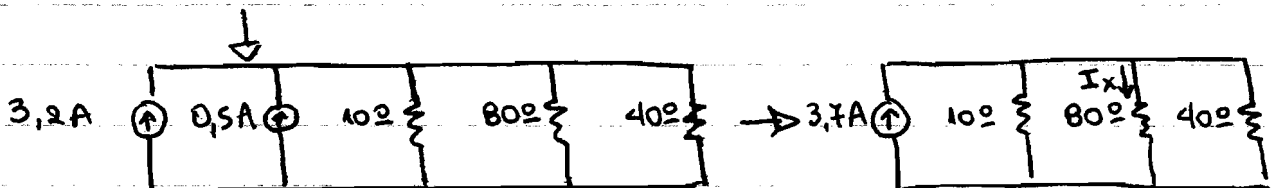
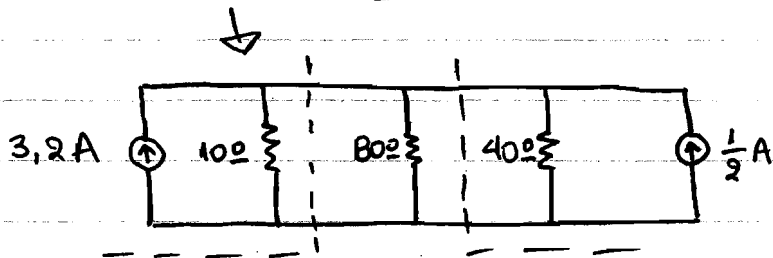


$$I_x = ?$$

Μέθοδοι επίλυσης

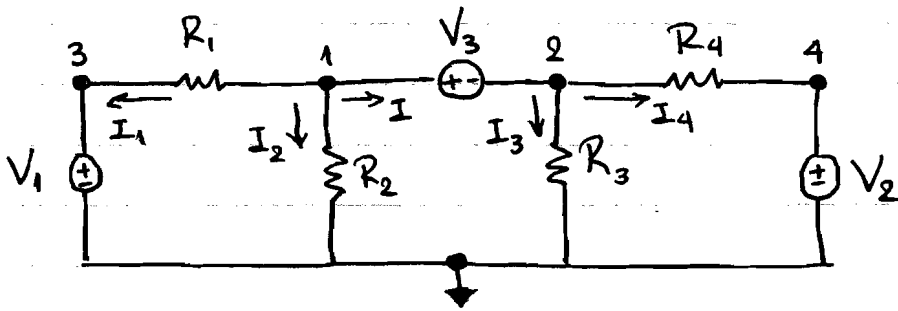
1. Μέθοδος των κόμβων
2. Μετακληματοποιός πηγών (παλεύουμε αντιστάσεις)
3. Thevenin για λείπος κόμβων
4. Η αρχή της επαλληλίας

Για την περίπτωση που φάινω την ένταση του ρεύματος  $I_x$  που διαρρέει την αντιστάση ανάμεσα για A και B  $\rightarrow$  θα χρησιμοποιούσα τη μέθοδο κατά Thevenin.



$$I_x = \frac{\frac{1}{80}}{\frac{1}{10} + \frac{1}{80} + \frac{1}{40}} \cdot 3,7 = 0,336 \text{ A}$$

## Παράδειγμα 2



$$\begin{aligned} U_1 - U_2 &= V_3 \\ U_3 &= V_1 \\ U_4 &= V_2 \end{aligned}$$

### Μέθοδος των κόμβων

1. Ορίσω κόμβο αναφορά

2. Επιλέγω αυθαίρετα τη φορά των ρευμάτων

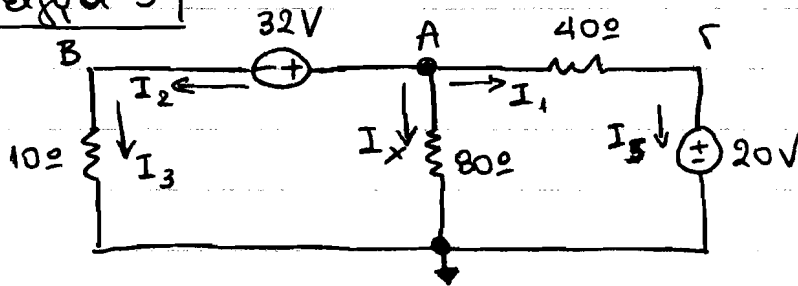
3. Εφαρμόζω νόμο ρευμάτων του Kirchhoff

Κόμβος 1 :  $0 = I_1 + I_2 + I \Leftrightarrow I_1 = I_2 + I \Leftrightarrow \frac{U_1 - U_3}{R_1} = \frac{U_1 - \emptyset}{R_2} + I$

Κόμβος 2 :  $I = I_3 + I_4 \Leftrightarrow I = \frac{U_2 - \emptyset}{R_3} + \frac{U_2 - U_4}{R_4}$

$$\frac{U_1 - U_1}{R_1} = \frac{U_1}{R_2} + \frac{U_2}{R_3} + \frac{U_2 - U_2}{R_4}$$

## Παράδειγμα 3



$$\begin{aligned} U_A - U_B &= 32 \text{ V} \\ U_\Gamma - \emptyset &= 20 \text{ V} \\ U_\Gamma &= 20 \text{ V} \end{aligned}$$

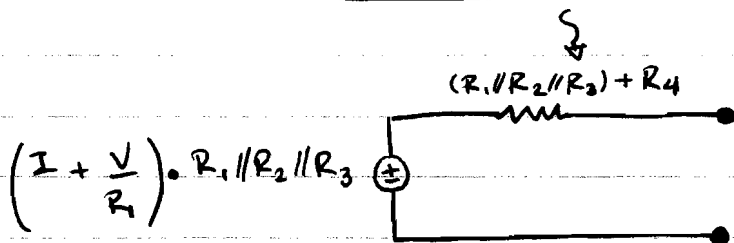
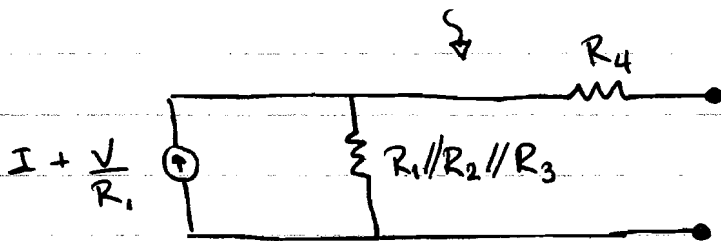
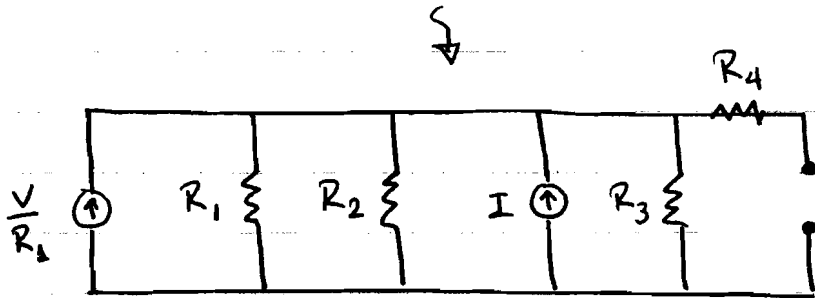
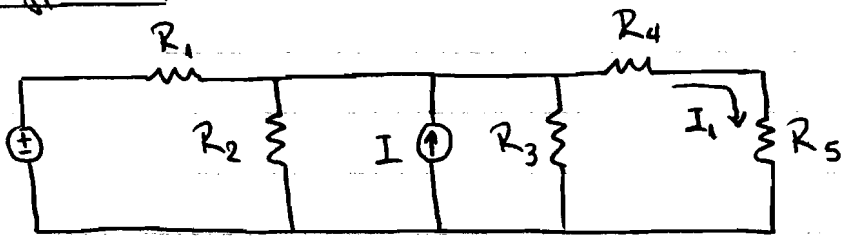
### Μέθοδος των κόμβων

A :  $0 = I_x + I_2 + I_1 \Rightarrow 0 = \frac{U_A - \emptyset}{80\Omega} + I_2 + \frac{U_A - U_\Gamma}{40\Omega}$

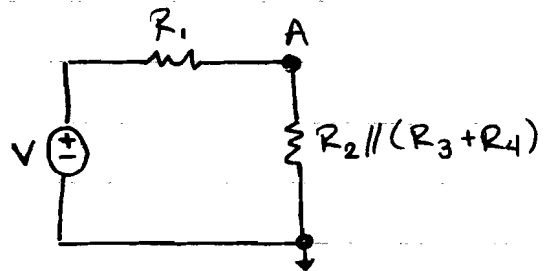
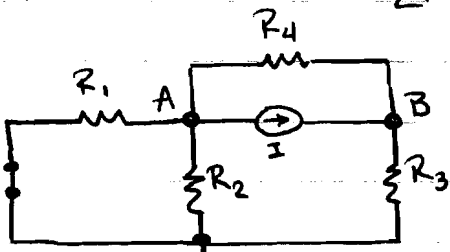
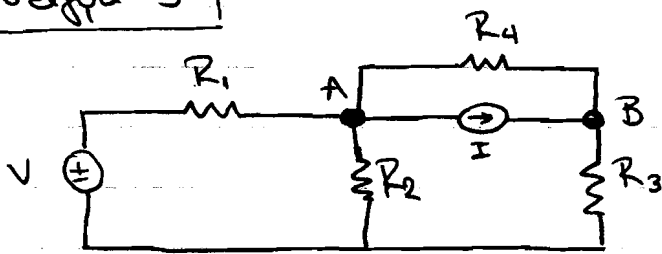
B :  $I_2 = I_3 \Rightarrow I_2 = \frac{U_B - \emptyset}{10\Omega}$

Γ :  $I_1 = I_5 \Rightarrow \frac{U_A - U_\Gamma}{40\Omega} = I_5$

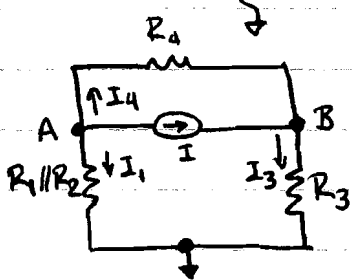
Παράδειγμα 4



Παράδειγμα 5

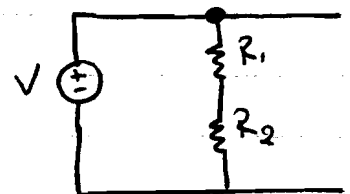
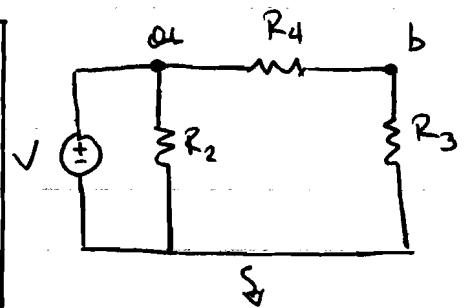


$$V_{A2} = \frac{R_2 \parallel (R_3 + R_4)}{R_1 + R_2 \parallel (R_3 + R_4)} \cdot V$$

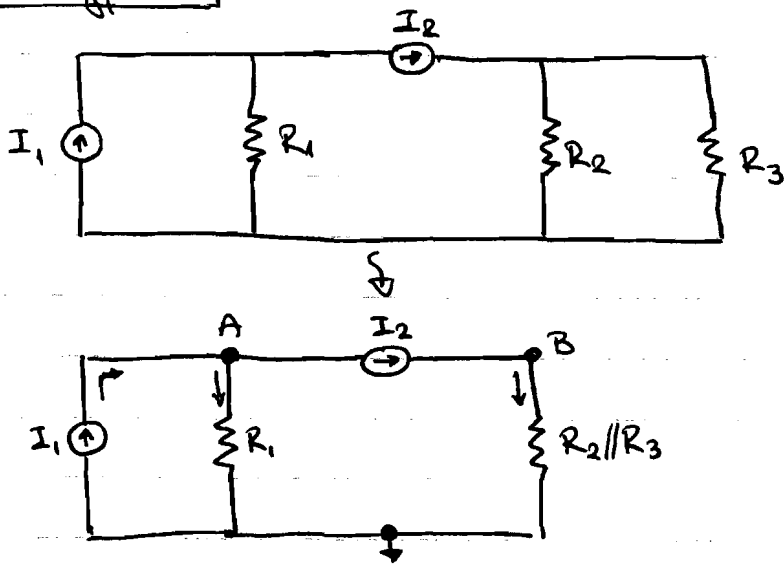


$$0 = I_4 + I + I_1 \Leftrightarrow 0 = \frac{V_A - V_B}{R_4} + I + \frac{V_A - 0}{R_1 \parallel R_2} = V_{A1}$$

$$I + I_4 = I_3 \Leftrightarrow I + \frac{V_A - V_B}{R_4} = \frac{V_B - 0}{R_3} = V_{B1}$$



**Παράδειγμα 6**

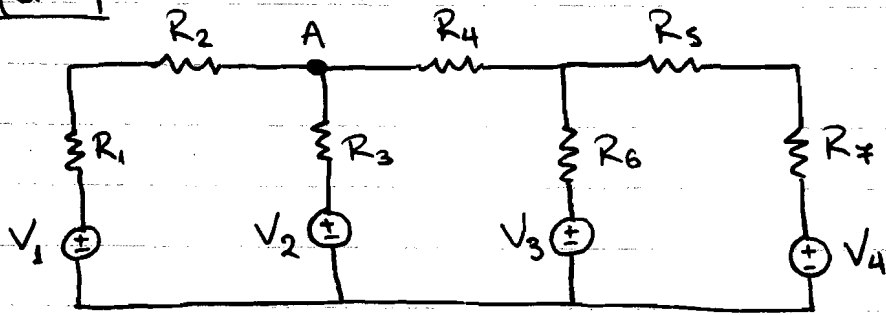


A :  $I_1 = I_1 + I_2 \Rightarrow I_1 = \frac{V_A}{R_1} + I_2$

B :  $I_2 = I_3 \Rightarrow I_2 = \frac{V_B}{R_2 // R_3}$

$V_A = R_1 (I_1 - I_2)$   
 $V_B = (R_2 // R_3) \cdot I_2$

**Παράδειγμα 7**



Λόγω αμοιροφθίας γαγ ε/μπερται περιβώτερο η μέθοδος τής εναρτήριας.