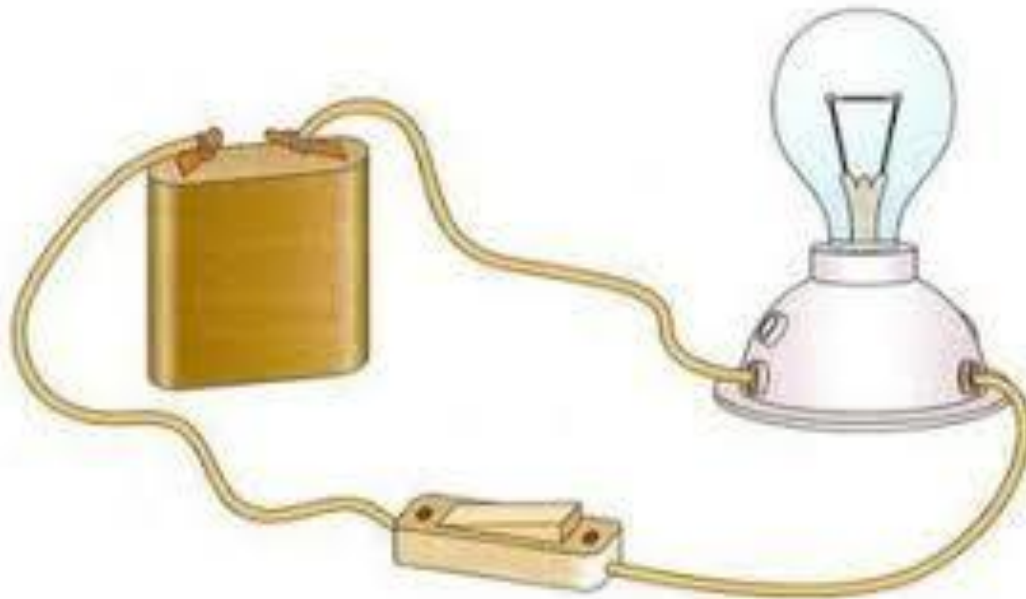
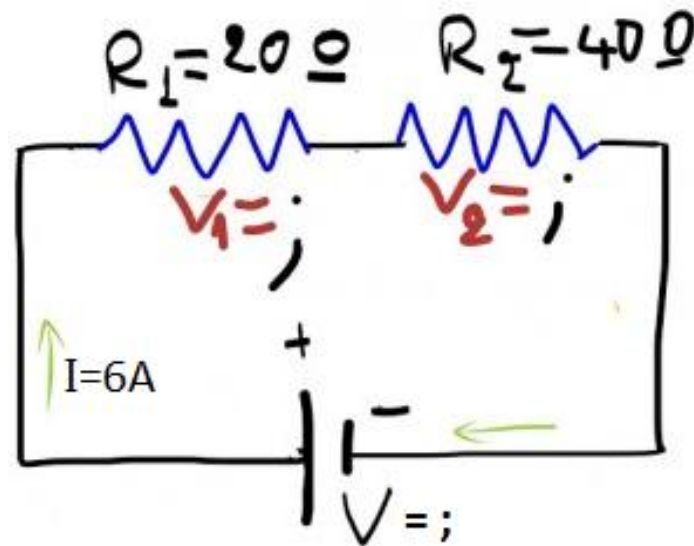


# Επίλυση Κυκλωμάτων



<http://imarinakis.mysch.gr/>

# Παράδειγμα 1

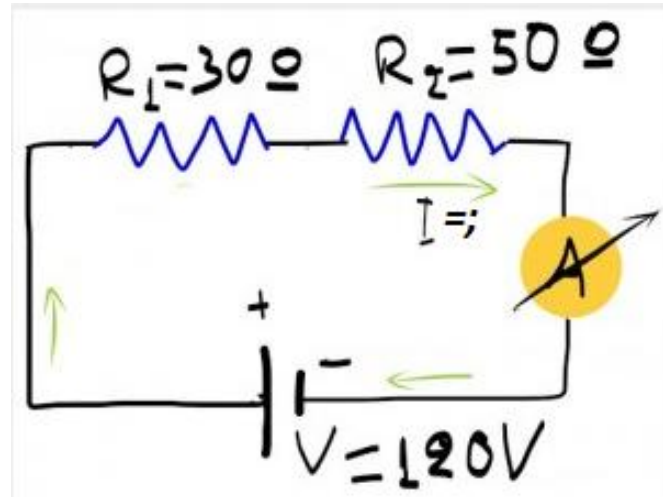


$$U_1 = R_1 I = 20 * 6 = 120V$$

$$U_2 = R_2 I = 40 * 6 = 240V$$

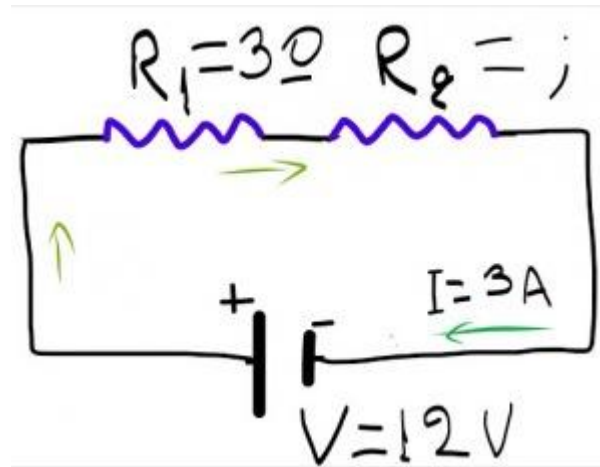
$$U = U_1 + U_2 = 120 + 240 = 360V$$

# Παράδειγμα 2



$$I = \frac{U}{R_{\sigma\lambda}} = \frac{U}{R_1 + R_2} = \frac{120}{30 + 50} = \frac{120}{80} = 1,5A$$

# Παράδειγμα 3

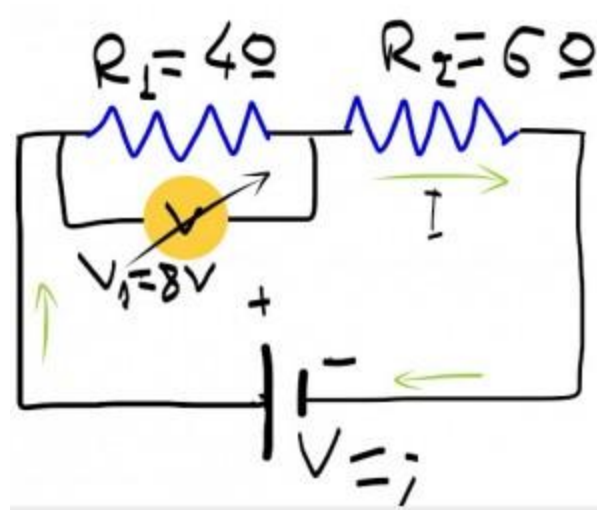


$$U_1 = R_1 I = 3 * 3 = 9V$$

$$U = U_1 + U_2 \Rightarrow U_2 = U - U_1 = 12 - 9 = 3V$$

$$R_2 = \frac{U_2}{I} = \frac{3}{3} = 1\Omega$$

# Παράδειγμα 4

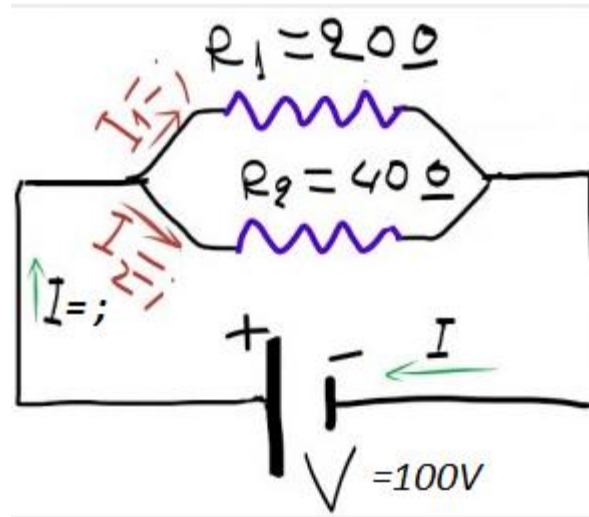


$$I = \frac{U_1}{R_1} = \frac{8}{4} = 2A$$

$$U_2 = R_2 I = 6 * 2 = 12V$$

$$U = U_1 + U_2 = 8 + 12 = 20V$$

# Παράδειγμα 5



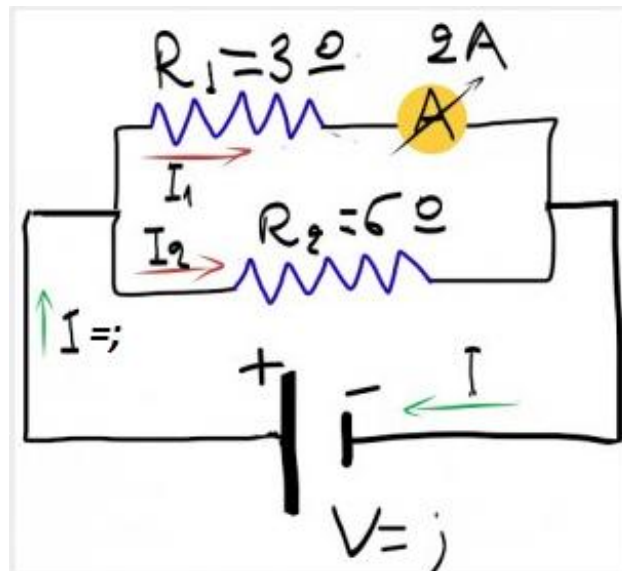
$$I_1 = \frac{U}{R_1} = \frac{100}{20} = 5A$$

$$I_2 = \frac{U}{R_2} = \frac{100}{40} = 2,5A$$

$$I = I_1 + I_2 = 5 + 2,5 = 7,5A$$

$$R_{o\lambda} = \frac{R_1 R_2}{R_1 + R_2} = \overset{\text{ή}}{\frac{20 * 40}{20 + 40}} = \frac{800}{60} = 13,3\Omega$$
$$I = \frac{U}{R_{o\lambda}} = \frac{100}{13,3} = 7,5A$$

# Παράδειγμα 6

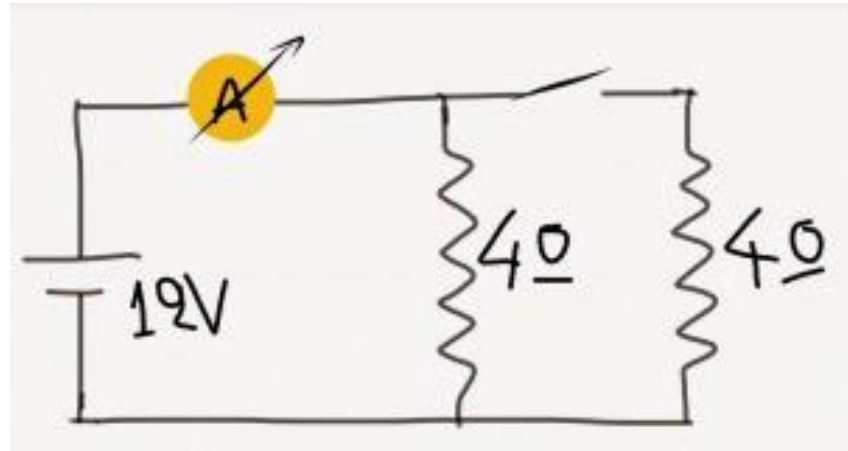


$$U = R_1 I_1 = 3 * 2 = 6V$$

$$I_2 = \frac{6}{6} = 1A$$

$$I = I_1 + I_2 = 2 + 1 = 3A$$

# Παράδειγμα 7



Διακόπτης ανοιχτός:

$$I = \frac{U}{R_1} = \frac{12}{4} = 3A$$

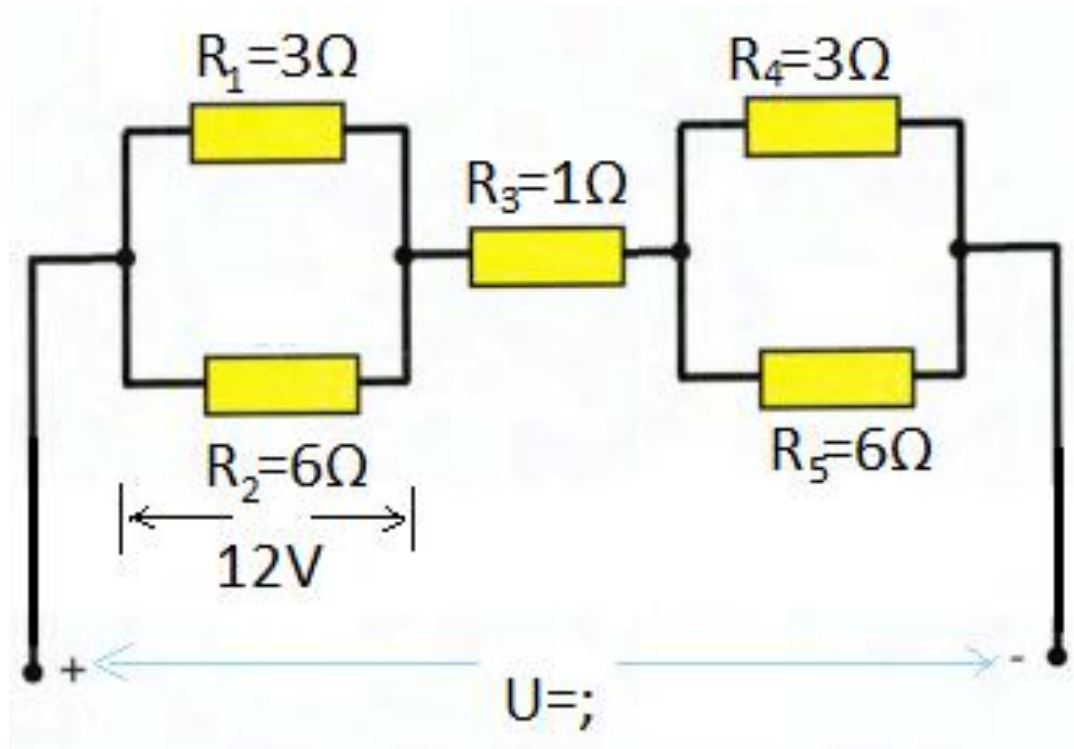
$$R_{ολ} = \frac{R_1 R_2}{R_1 + R_2} = \frac{4 * 4}{4 + 4} = \frac{16}{8} = 2\Omega$$

Διακόπτης κλειστός:

$$I' = \frac{U}{R_{ολ}} = \frac{12}{2} = 6A$$



# Παράδειγμα 8



# Παράδειγμα8

$$I_2 = \frac{U_{12}}{R_2} = \frac{12}{6} = 2A$$

$$I_1 = \frac{U_{12}}{R_1} = \frac{12}{3} = 4A$$

$$I = I_1 + I_2 = 2 + 4 = 6A$$

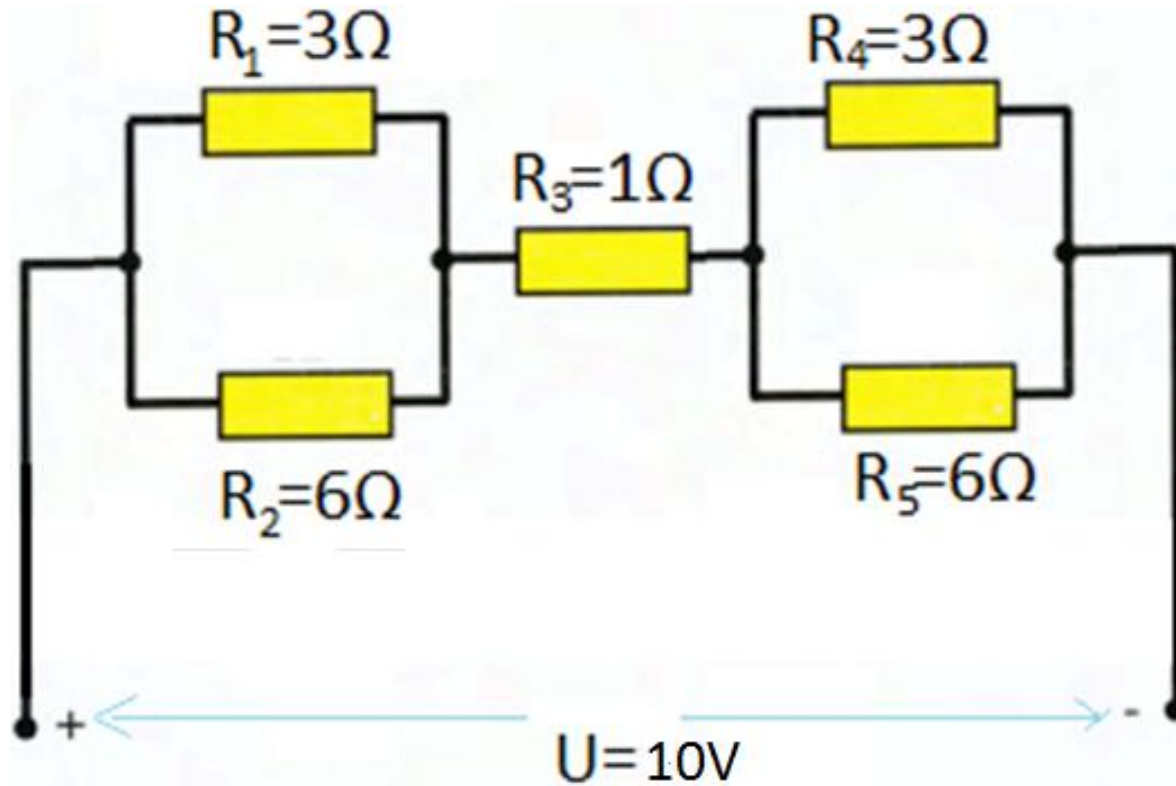
$$U_3 = R_3 I = 1 * 6 = 6V$$

$$R_{45} = \frac{R_4 R_5}{R_4 + R_5} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

$$U_{45} = R_{45} I = 2 * 6 = 12V$$

$$U = U_{12} + U_3 + U_{45} = 12 + 6 + 12 = 30V$$

# Παράδειγμα 9



Να υπολογιστούν τα ρεύματα του κυκλώματος;

# Παράδειγμα9

$$R_{12} = \frac{R_1 R_2}{R_1 + R_2} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

$$R_{45} = \frac{R_4 R_5}{R_4 + R_5} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

$$R_{o\lambda} = R_{12} + R_3 + R_{45} = 2 + 1 + 2 = 5\Omega$$

$$I = \frac{U}{R_{o\lambda}} = \frac{10}{5} = 2A$$

$$I_3 = I = 2A$$

# Παράδειγμα9

$$R_{12} = \frac{R_1 R_2}{R_1 + R_2} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

$$U_{12} = R_{12} I = 2 * 2 = 4V$$

$$I_1 = \frac{U_{12}}{R_1} = \frac{4}{3} A = 1,33A$$

$$I_2 = \frac{U_{12}}{R_2} = \frac{4}{6} = \frac{2}{3} A = 0,66A = 0,66 * (1000) = 660mA$$

$$R_{45} = \frac{R_4 R_5}{R_4 + R_5} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

# Παράδειγμα9

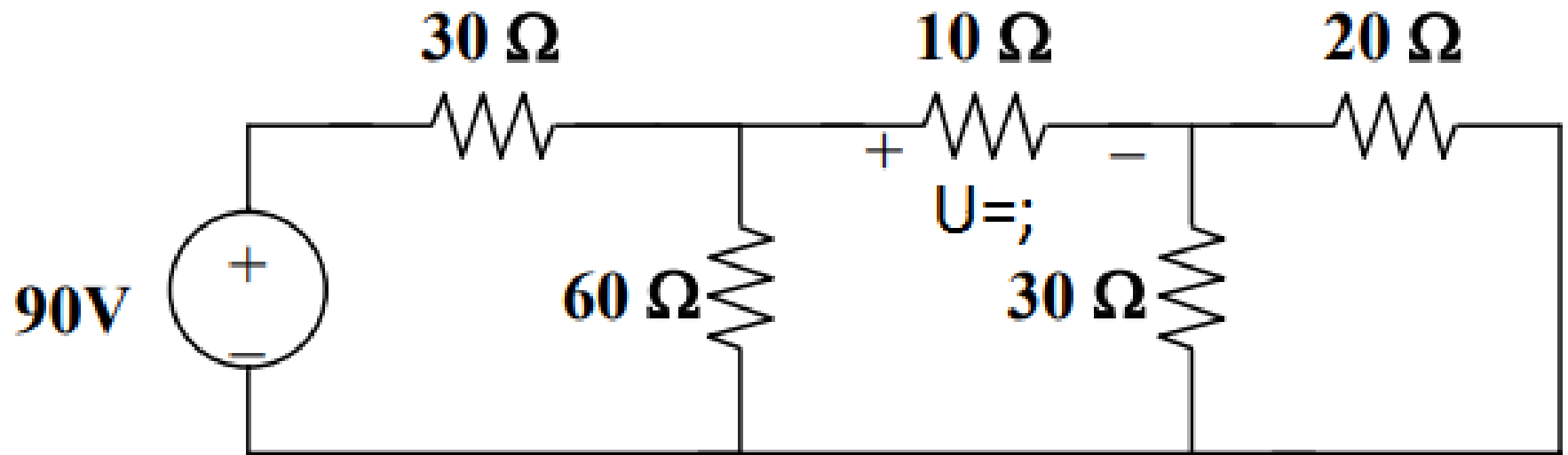
$$R_{45} = \frac{R_4 R_5}{R_4 + R_5} = \frac{3 * 6}{3 + 6} = \frac{18}{9} = 2\Omega$$

$$U_{45} = R_{45} I = 2 * 2 = 4V$$

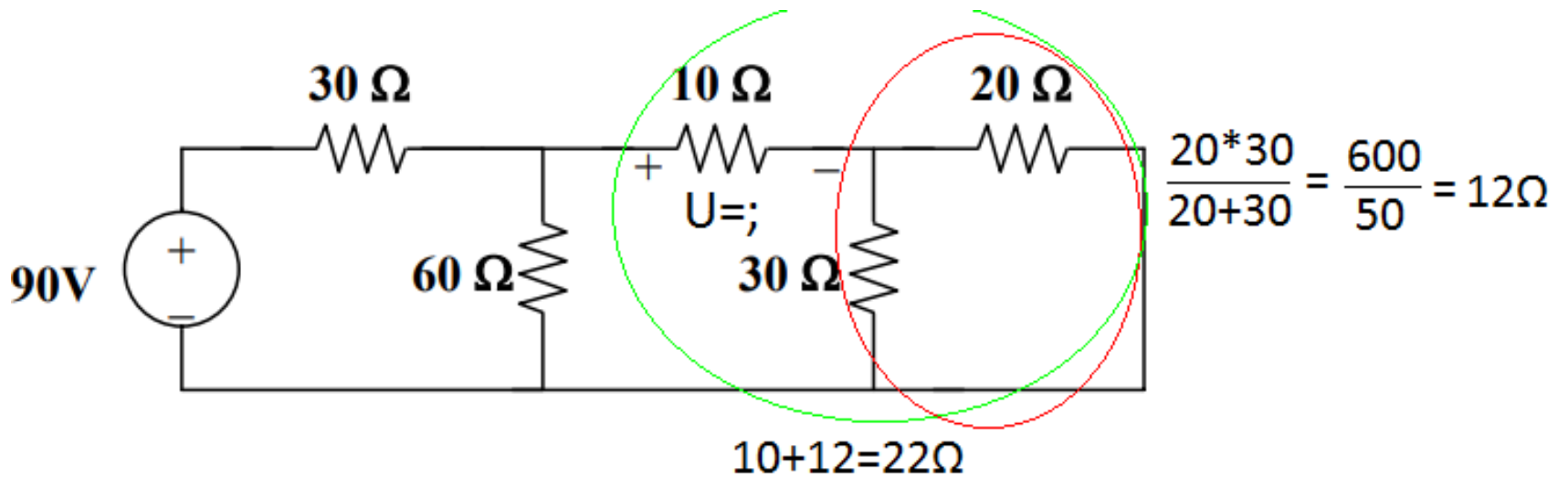
$$I_4 = \frac{U_{45}}{R_4} = \frac{4}{3} A = 1,33A$$

$$I_5 = \frac{U_{45}}{R_5} = \frac{4}{6} = \frac{2}{3} A = 0,66A = 660mA$$

# Παράδειγμα 10

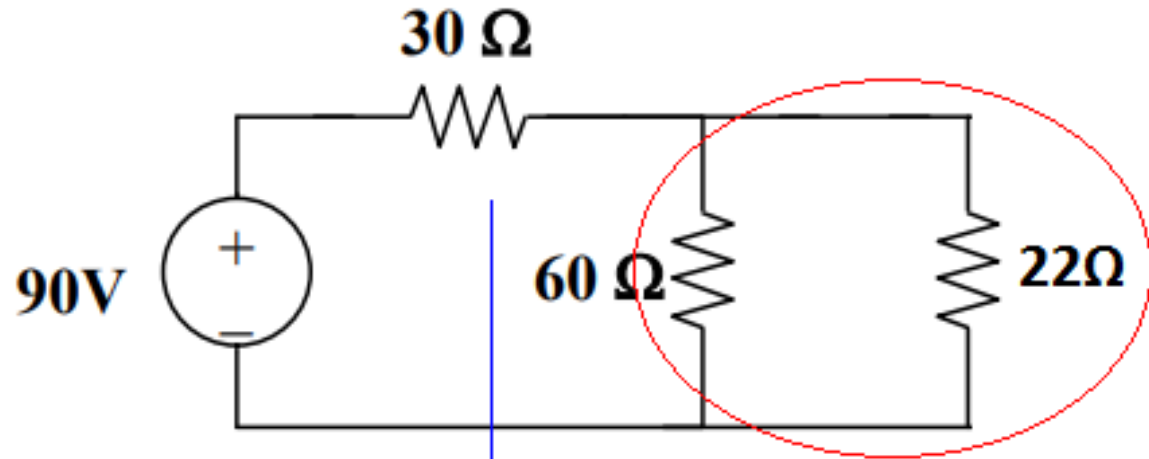


# Παράδειγμα 10





# Παράδειγμα 10



$$\frac{60 \cdot 22}{60 + 22} = 16,09\Omega$$

$$R_{\text{ολ}} = 30 + 16,09 = 46,09\Omega$$

$$I = \frac{90}{46,09} = 1,95\text{A}$$

# Παράδειγμα 10

