



$$V_1 = 24V$$

$$R_1 = 8 \cdot 100 [\Omega] = 800 [\Omega]$$

$$R_2 = 1 [k\Omega] = 1000 [\Omega]$$

$$R_3 = 7 [k\Omega] = 7000 [\Omega]$$

$$R_4 = 3 \cdot 100 [\Omega] = 300 [\Omega]$$

$$R_5 = 7 \cdot 100 [\Omega] = 700 [\Omega]$$

$$R_6 = 500 [\Omega]$$

$$\begin{cases} I_1(R_1 + R_4 + R_6) - I_2 R_1 - I_3 R_4 = E_1 \\ I_2(R_1 + R_2 + R_3) - I_1 R_1 - I_3 R_3 = 0 \\ I_3(R_3 + R_4 + R_5) - I_1 R_4 - I_2 R_3 = 0 \end{cases}$$

$$\begin{cases} I_1(800 + 300 + 500) - I_2 \cdot 800 - I_3 \cdot 300 = 24 \\ I_2(800 + 1000 + 7000) - I_1 \cdot 800 - I_3 \cdot 7000 = 0 \\ I_3(7000 + 300 + 700) - I_1 \cdot 700 - I_2 \cdot 7000 = 0 \end{cases}$$

$$\begin{cases} 1600I_1 - 800I_2 - 300I_3 = 24 \\ -800I_1 + 8800I_2 - 7000I_3 = 0 \\ -700I_1 - 7000I_2 + 8000I_3 = 0 \end{cases}$$



$$\begin{vmatrix} 1600 & -800 & -300 \\ -800 & 8800 & -7000 \\ -700 & -7000 & 8000 \end{vmatrix} = 26772000000 (W_g)$$

$$\begin{vmatrix} 24 & -800 & -300 \\ 0 & 8800 & -7000 \\ 0 & -7000 & 8000 \end{vmatrix} = 513600000 (W_1)$$

$$\begin{vmatrix} 1600 & 24 & -300 \\ -800 & 0 & -7000 \\ -700 & 0 & 8000 \end{vmatrix} = 271200000 (W_2)$$

$$\begin{vmatrix} 1600 & -800 & 24 \\ -800 & 8800 & 0 \\ -700 & -7000 & 0 \end{vmatrix} = 161280000 (W_3)$$

$$\begin{aligned} W_g &= 26772000000 \\ W_1 &= 513600000 \\ W_2 &= 271200000 \\ W_3 &= 161280000 \end{aligned}$$

$$I_1 = \frac{W_1}{W_g} = 0,01918 = 19,18 \text{ mA}$$

$$I_2 = \frac{W_2}{W_g} = 0,01012 = 10,12 \text{ mA}$$

$$I_3 = \frac{W_3}{W_g} = 0,00602 = 6,02 \text{ mA}$$

$$I_4 = I_1 + I_3$$

$$I_5 = I_2 - I_3$$

$$I_6 = I_1 + I_2$$

$$I_4 = 19,18 + 6,02 = 25,2 \text{ mA}$$

$$I_5 = 10,12 - 6,02 = 4,1 \text{ mA}$$

$$I_6 = 19,18 + 10,12 = 29,3 \text{ mA}$$