

Egyenletrendszerek rendezése és megoldása

Rendezzük az alábbi (lineáris) egyenletrendszereket, majd oldjuk meg!

1.

$$\left. \begin{aligned} \frac{x_1 - 2}{5} + \frac{x_1 - x_2}{3} - 0,4 &= 0 \\ \frac{x_2 - x_1}{3} + \frac{x_2 - 3}{5} + 0,8 &= 0 \end{aligned} \right\}$$

2.

$$\left. \begin{aligned} \frac{x_1 - x_2}{10} - \frac{x_2 - 3}{4} \cdot 5 + \frac{x_1 - 10}{7} &= 0 \\ \frac{x_2 - x_1}{10} + \frac{x_2}{5} - 0,7 &= 0 \end{aligned} \right\}$$

3.

$$\left. \begin{aligned} 5 \cdot (x_1 - x_2) + 3 \cdot (x_1 - 0,4) + 10 &= 0 \\ -2x_1 + 3 \cdot (x_2 - x_1) &= 0 \end{aligned} \right\}$$

4.

$$\left. \begin{aligned} \frac{u_1 - u_2}{3} + \frac{u_1 - u_3}{5} + \frac{u_1}{10} - 10 &= 0 \\ \frac{u_2 - u_1}{3} + \frac{u_2 - u_3}{5} - 2 &= 0 \\ \frac{u_3 - u_1}{3} + \frac{u_3 - u_2}{5} &= 0 \end{aligned} \right\}$$

5.

$$\left. \begin{aligned} \frac{u_1}{5} + \frac{u_1 - 2u_3}{2} &= 0 \\ \frac{u_2 - u_1}{3} + \frac{u_2 - u_3}{4} - 2 &= 0 \\ \frac{u_3}{4} + \frac{u_3 - u_1}{3} &= 0 \end{aligned} \right\}$$

6.

$$\left. \begin{aligned} 3(j_1 - j_2 + j_3) + 2(j_1 - j_3) - 10 &= 10 \\ j_2 - 2(j_1 + j_3) &= 0 \\ 3(j_3 - j_2 + j_1) + 2(j_3) - 0,5 &= 0 \end{aligned} \right\}$$

7.

$$\left. \begin{aligned} 5(u_1 - (u_2 + 10)) + 2u_2 - 3(u_2 + 10) &= 0 \\ 3(u_2 - u_1) + 2(u_2 + 10) - 2 &= 0 \\ u_1 + u_2 - u_3 &= 2u_2 + 10 \end{aligned} \right\}$$

Végeredmények :

1. $x_1 = 2,077; x_2 = 0,923;$
2. $x_1 = -4; x_2 = 1;$
3. $x_1 = 26,4; x_2 = 44;$
4. $u_1 = 117,81; u_2 = 122,18; u_3 = 119,45$
5. $u_1 = 0; u_2 = 3,4286; u_3 = 0$
6. $j_1 = -0,1786; j_2 = -0,2857; j_3 = 0,0357$
7. $u_1 = 41,714; u_2 = 21,428; u_3 = 10,285$