12.03

– Nincs toldás

– 1 megoldás

– Végtelen sok toldás

Válasszuk meg λ-t úgy hogy igaz legyen:

$$2x_1 - x_2 + x_3 + x_4 = 1$$
$$x_1 + 2x_2 - x_3 + 4x_4 = 2$$
$$x_1 + 7x_2 - 4x_3 + 11x_4 = \lambda$$

$$\left(\begin{array}{cccc|c} 2 & -1 & 1 & 1 & 1 \\ 1 & 2 & -1 & 4 & 2 \\ 1 & 7 & -4 & 11 & \lambda \end{array}\right) \sim \left(\begin{array}{cccc|c} 1 & 2 & -1 & 4 & 2 \\ 2 & -1 & 1 & 1 & 1 \\ 1 & 7 & -4 & 11 & \lambda \end{array}\right) \sim \left(\begin{array}{cccc|c} 1 & 2 & -1 & 4 & 2 \\ 0 & -5 & 3 & -7 & -3 \\ 0 & 5 & -3 & 7 & \lambda-2 \end{array}\right) \sim$$

$$\left(\begin{array}{cccc|c} 1 & 2 & -1 & 4 & 2 \\ 0 & 5 & -3 & 7 & 3 \\ 0 & 5 & -3 & 7 & \lambda-2 \end{array}\right) \sim \left(\begin{array}{cccc|c} 1 & 2 & -1 & 4 & 2 \\ 0 & 5 & -3 & 7 & 3 \\ 0 & 0 & 0 & 0 & \boxed{\lambda-2-3} \end{array}\right)$$

Megoldás $\Longleftrightarrow$ $\lambda - 2 - 3 = 0$

$$\lambda = 5$$

(2) Cramer szabállyal!

$$2x_1 - x_2 - x_3 = 4$$
$$3x_1 + 4x_2 - 2x_3 = 11$$
$$3x_1 - 2x_2 + 4x_3 = 11$$

$$d = \begin{vmatrix} 2 & -1 & -1 \\ 3 & 4 & -2 \\ 3 & -2 & 4 \end{vmatrix} = 60$$

$$d_1 = \begin{vmatrix} 4 & -1 & -1 \\ 11 & 4 & -2 \\ 11 & -2 & 4 \end{vmatrix} = 180 \qquad d_2 = \begin{vmatrix} 2 & 4 & -1 \\ 3 & 11 & -2 \\ 3 & 11 & 4 \end{vmatrix} = 60 \qquad d_3 = \begin{vmatrix} 2 & -1 & 4 \\ 3 & 4 & 11 \\ 3 & -2 & 11 \end{vmatrix} = 60$$

$$x_1 = \frac{d_1}{d} = 3 \qquad x_2 = \frac{d_2}{d} = 1 \qquad x_3 = \frac{d_3}{d} = 1$$