

Answer on Question #46675 – Math – Linear Algebra

Question:

Solve the system of equations using Gauss-Jordan method with pivoting.

$$10x_1 + x_2 + x_3 = 12$$

$$10x_1 + x_2 + x_3 = 12$$

$$10x_1 + x_2 + x_3 = 12$$

Solution:

Rewrite the system in matrix form and solve it by Gaussian Elimination (Gauss-Jordan elimination)

$$\begin{pmatrix} 10 & 1 & 1 & 12 \\ 10 & 1 & 1 & 12 \\ 10 & 1 & 1 & 12 \end{pmatrix}$$

divide the 1-th row by 10

$$\begin{pmatrix} 1 & 0.1 & 0.1 & 1.2 \\ 10 & 1 & 1 & 12 \\ 10 & 1 & 1 & 12 \end{pmatrix}$$

from 2; 3 rows we subtract the 1-th row, multiplied respectively by 10; 10

$$\begin{pmatrix} 1 & 0.1 & 0.1 & 1.2 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

Answer: $x_1 + (0.1)x_2 + (0.1)x_3 = 1.2$