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1. $11x_1 + 7x_2 - 2x_3 = 6$
$x_1 + 5x_2 + x_3 = -5$
$3x_1 + x_2 - 4x_3 = -2$

$$\left[\begin{array}{ccc|c} 11 & 7 & -2 & 6 \\ 1 & 5 & 1 & -5 \\ 3 & 1 & -4 & -2 \end{array}\right] \xrightarrow{R_2 = R_2 - C.R_1} \left[\begin{array}{ccc|c} 11 & 7 & -2 & 6 \\ 0 & \frac{48}{11} & \frac{13}{11} & -\frac{61}{11} \\ 3 & 1 & -4 & -2 \end{array}\right]$$

Pivot : $R_{11} = 11$

$C = \frac{R_{21}}{Pivot} = \frac{1}{11}$

$5 - \frac{1}{11}(7) = \frac{48}{11}$

$1 - \frac{1}{11}(-2) = \frac{13}{11}$

$-5 - \frac{1}{11}(6) = -\frac{61}{11}$

$R_3 = R_3 - CR_1$

$$\left[\begin{array}{ccc|c} 11 & 7 & -2 & 6 \\ 0 & \frac{48}{11} & \frac{13}{11} & -\frac{61}{11} \\ 0 & -\frac{10}{11} & -\frac{38}{11} & -\frac{40}{11} \end{array}\right]$$

Pivot $= R_{11} = 11$

$C = \frac{R_{31}}{Pivot} = \frac{3}{11}$

$1 - \frac{3}{11}(7) = -\frac{10}{11}$

$-4 - \frac{3}{11}(-2) = -\frac{38}{11}$

$-2 - \frac{3}{11}(6) = -\frac{40}{11}$

$R_3 = R_3 - C R_2$

$$\left[\begin{array}{ccc|c} 11 & 7 & -2 & 6 \\ 0 & \frac{48}{11} & \frac{13}{11} & -\frac{61}{11} \\ 0 & 0 & -\frac{77}{24} & -\frac{115}{24} \end{array}\right]$$

Pivot $= R_{12} = \frac{48}{11}$

$C = \frac{R_{32}}{R_{22}} = \frac{-\frac{10}{11}}{\frac{48}{11}} = -\frac{5}{24}$

$-\frac{38}{11} - \left(-\frac{5}{24}\right)\left(\frac{13}{11}\right) = -\frac{77}{24}$

$-\frac{40}{11} - \left(-\frac{5}{24}\right)\left(-\frac{61}{11}\right) = -\frac{115}{24}$

$\frac{48}{11}x_2 + \frac{13}{11}x_3 = -\frac{61}{11}$

$\frac{48}{11}x_2 + \frac{13}{11}\left(\frac{115}{77}\right) = -\frac{61}{11}$

$\frac{48}{11}x_2 = -\frac{61}{11} - \frac{1495}{847}$

$x_2 = -\frac{6492}{847} \cdot \frac{11}{48} = -\frac{129}{77} = -1,67532$

$-\frac{77}{24}x_3 = -\frac{115}{24}$

$-77x_3 = -115$

$x_3 = \frac{115}{77} = 1,49351$

$11x_1 + 7\left(-\frac{129}{77}\right) - 2\left(\frac{115}{77}\right) = 6$

$11x_1 = \frac{145}{7}$

$x_1 = \frac{145}{77}$

$x_1 = 1,88312$

$\therefore (x_1, x_2, x_3) = (1,88312, -1,67532, 1,49351)$

2. $10x_1 - 5x_2 + 2x_3 = 6$
$3x_1 + 4x_2 + 8x_3 = -7$
$x_1 + 5x_2 - 5x_3 = 9$

$$\left[\begin{array}{ccc|c} 10 & -5 & 2 & 6 \\ 3 & 4 & 8 & -7 \\ 1 & 5 & -5 & 9 \end{array}\right] \longrightarrow \left[\begin{array}{ccc|c} 10 & -5 & 2 & 6 \\ 0 & \frac{11}{2} & \frac{37}{5} & -\frac{44}{5} \\ 1 & 5 & -5 & 9 \end{array}\right]$$

$R_2 = R_2 - cR_1$

Pivot: $R_{11} = 10$

$c = \frac{R_{21}}{\text{Pivot}} = \frac{3}{10}$

$4 - \frac{3}{10}(-5) = \frac{11}{2}$

$8 - \frac{3}{10}(2) = \frac{37}{5}$

$-7 - \frac{3}{10}(6) = -\frac{35}{5} - \frac{9}{5} = -\frac{44}{5}$

Pivot: $R_{11} = 10$

$c = \frac{R_{31}}{\text{Pivot}} = \frac{1}{10}$

$$\left[\begin{array}{ccc|c} 10 & -5 & 2 & 6 \\ 0 & \frac{11}{2} & \frac{37}{5} & -\frac{44}{5} \\ 0 & \frac{11}{2} & -\frac{26}{5} & \frac{42}{5} \end{array}\right] \longrightarrow \left[\begin{array}{ccc|c} 10 & -5 & 2 & 6 \\ 0 & \frac{11}{2} & \frac{37}{5} & -\frac{44}{5} \\ 0 & 0 & -\frac{63}{5} & \frac{86}{5} \end{array}\right]$$

$R_3 = R_3 - c.R_1$

$5 - \frac{1}{10}(-5) = \frac{11}{2}$

$-5 - \frac{1}{10}(2) = -\frac{26}{5}$

$9 - \frac{1}{10}(6) = \frac{45}{5} - \frac{3}{5} = \frac{42}{5}$

Pivot: $R_{22} = \frac{11}{2}$

$c = \frac{R_{32}}{\text{Pivot}} = \frac{\frac{11}{2}}{\frac{11}{2}} = 1$

$R_3 = R_3 - c.R_2$

$-\frac{26}{5} - 1.\frac{37}{5} = -\frac{63}{5}$

$\frac{42}{5} - 1.-\frac{44}{5} = \frac{86}{5}$

$-\frac{63}{5}x_3 = \frac{86}{5}$

$-63x_3 = -2$

$x_3 = \frac{86}{-63} = -\frac{86}{63} = 1,36508$

$$\frac{11}{2}x_2 + \frac{37}{5}\left(-\frac{86}{63}\right) = -\frac{44}{5}$$

$$\frac{11}{2}x_2 = -\frac{44}{5} + \frac{3182}{315}$$

$$\frac{11}{2}x_2 = \frac{82}{63}$$

$$x_2 = \frac{82}{63} \cdot \frac{2}{11}$$

$$x_2 = \frac{164}{693} = 0,23665$$

$$10x_1 - 5x_2 + 2x_3 = 6$$

$$10x_1 - 5\left(\frac{164}{693}\right) + 2\left(-\frac{86}{63}\right) = 6$$

$$10x_1 = 6 + \frac{904}{231}$$

$$10x_1 = \frac{2290}{231}$$

$$x_1 = \frac{2290}{2310} = 0,99134$$

$$\therefore (x_1, x_2, x_3) = (0,99134 , 0,23665 , -1,36508)$$