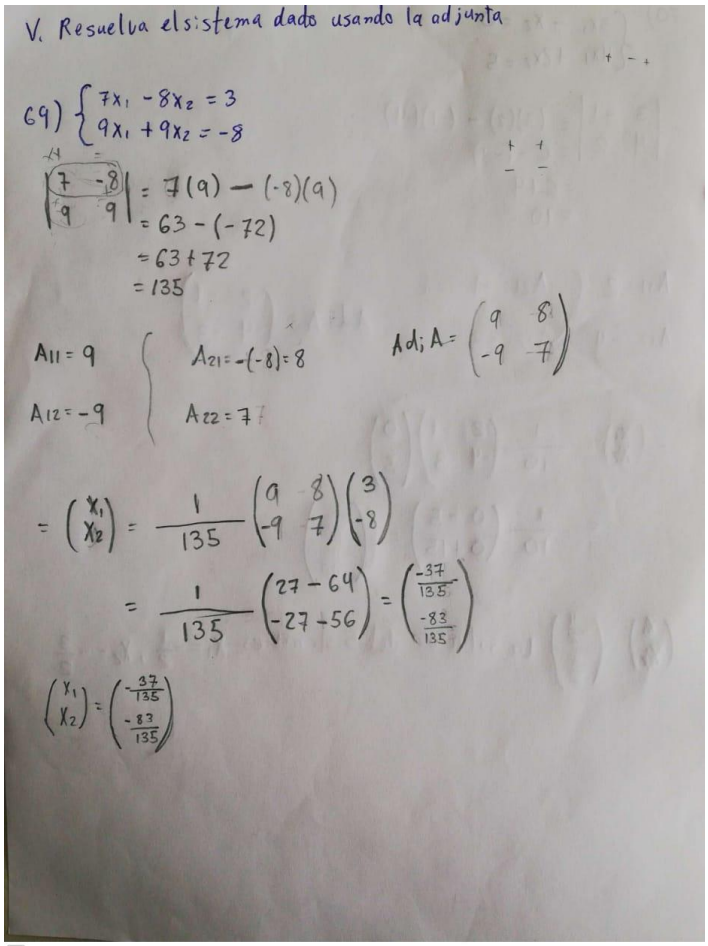
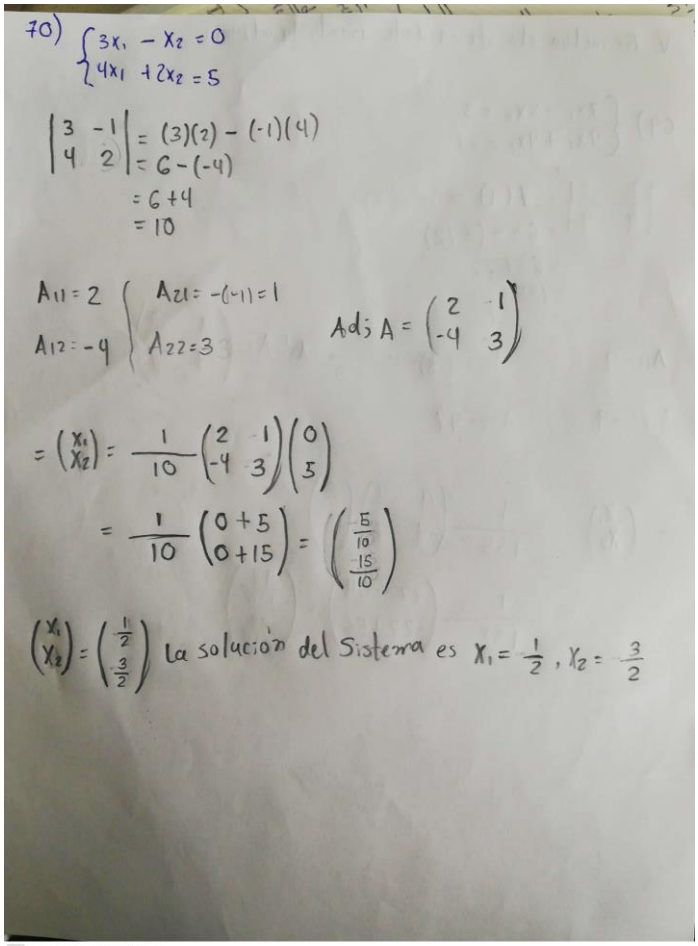
V. Parte

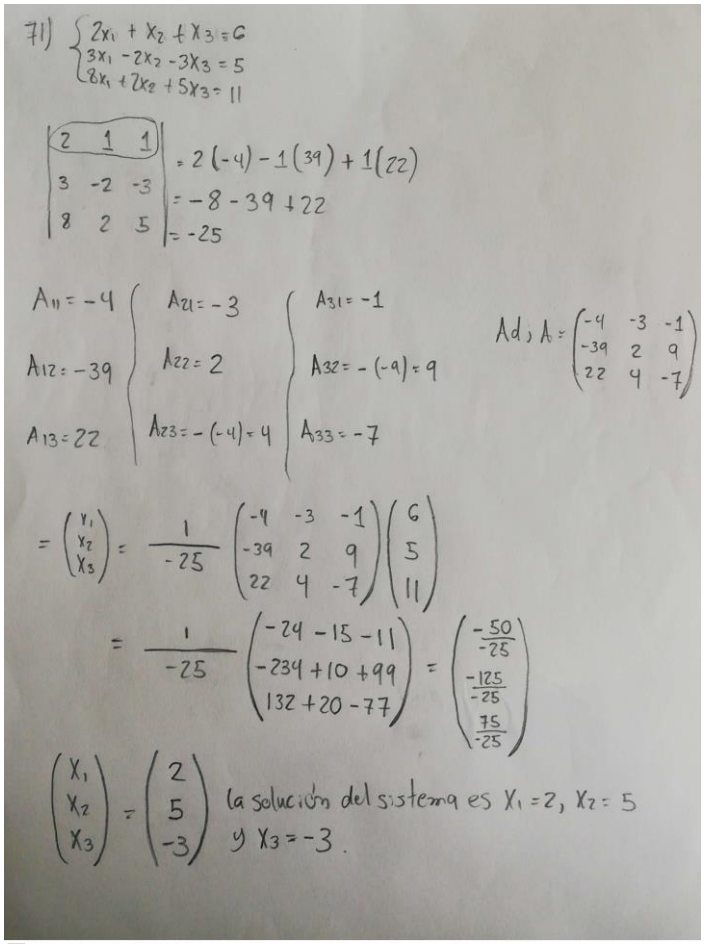
PROBLEMA 69



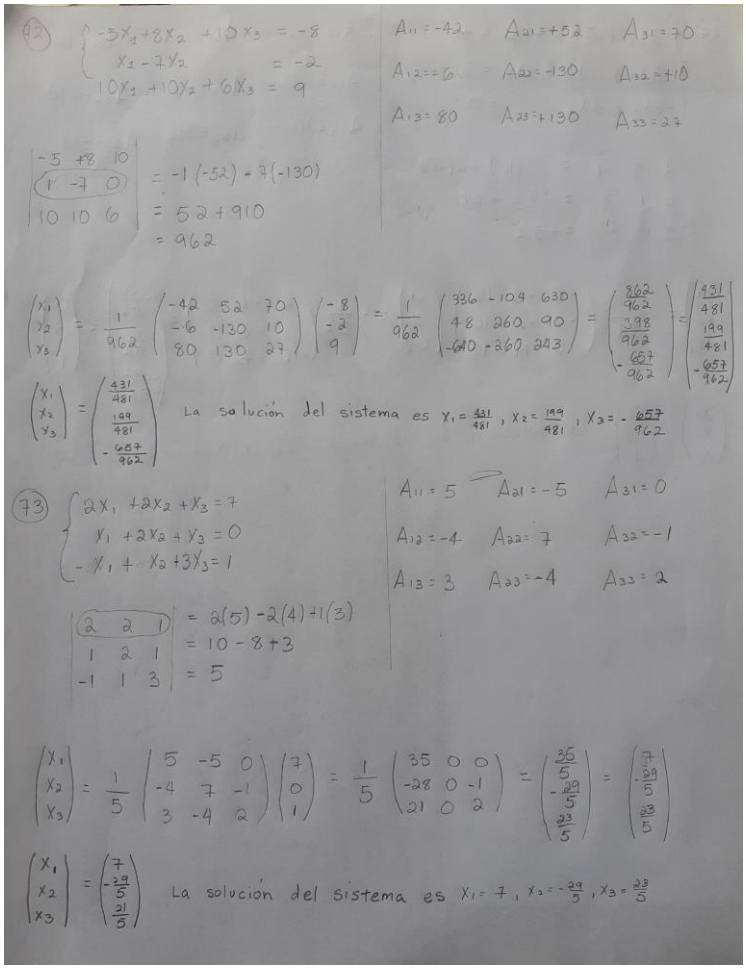
PROBLEMA 70



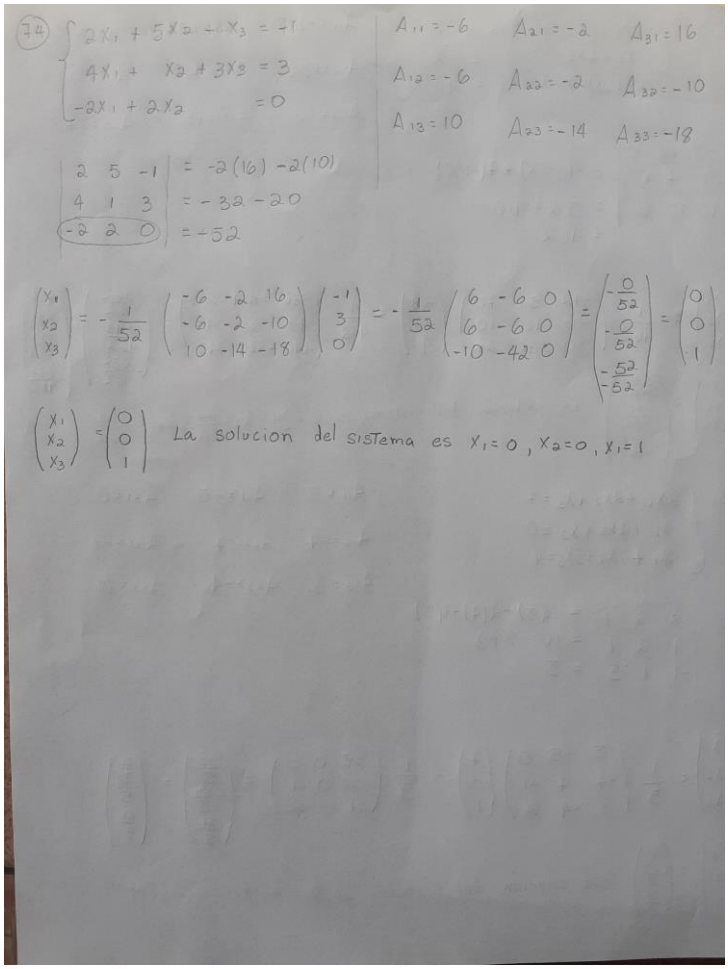
PROBLEMA 71



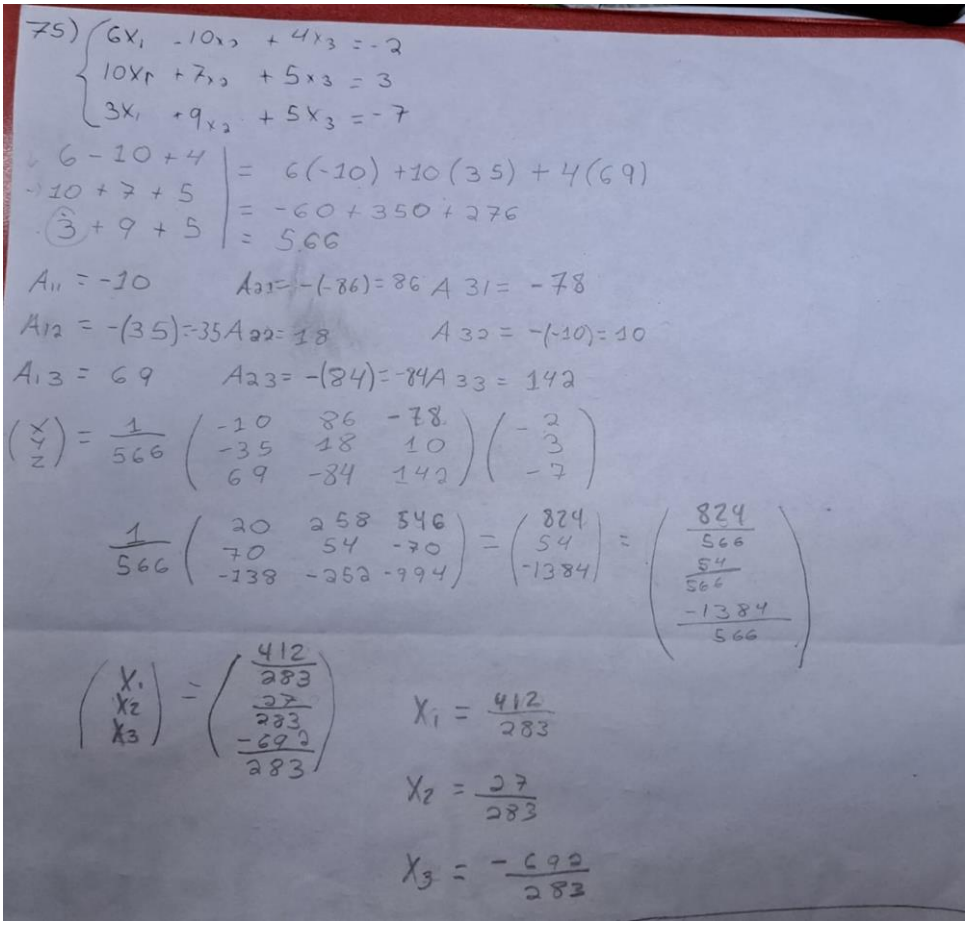
PROBLEMA 72 Y 73


72)
$\begin{cases} -5X_1 + 8X_2 + 10X_3 = -8 \\ X_1 - 7X_2 = -2 \\ 10X_1 + 10X_2 + 6X_3 = 9 \end{cases}$
$A_{11} = -42$ $A_{21} = +52$ $A_{31} = 70$
$A_{12} = -6$ $A_{22} = +130$ $A_{32} = +10$
$A_{13} = 80$ $A_{23} = +130$ $A_{33} = 27$
$\begin{vmatrix} -5 & +8 & 10 \\ 1 & -7 & 0 \\ 10 & 10 & 6 \end{vmatrix} = -1(-52) + 7(-130)$
$= 52 + 910$
$= 962$
$\begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} = \frac{1}{962} \begin{pmatrix} -42 & 52 & 70 \\ -6 & -130 & 10 \\ 80 & 130 & 27 \end{pmatrix} \begin{pmatrix} -8 \\ -2 \\ 9 \end{pmatrix} = \frac{1}{962} \begin{pmatrix} 336 & -104 & 630 \\ 48 & 260 & 90 \\ -640 & -260 & 243 \end{pmatrix} = \begin{pmatrix} \frac{862}{962} \\ \frac{398}{962} \\ -\frac{657}{962} \end{pmatrix} = \begin{pmatrix} \frac{431}{481} \\ \frac{199}{481} \\ -\frac{657}{962} \end{pmatrix}$
$\begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} = \begin{pmatrix} \frac{431}{481} \\ \frac{199}{481} \\ -\frac{657}{962} \end{pmatrix}$ La solución del sistema es $X_1 = \frac{431}{481}$, $X_2 = \frac{199}{481}$, $X_3 = -\frac{657}{962}$
73)
$\begin{cases} 2X_1 + 2X_2 + X_3 = 7 \\ X_1 + 2X_2 + X_3 = 0 \\ -X_1 + X_2 + 3X_3 = 1 \end{cases}$
$A_{11} = 5$ $A_{21} = -5$ $A_{31} = 0$
$A_{12} = -4$ $A_{22} = 7$ $A_{32} = -1$
$A_{13} = 3$ $A_{23} = -4$ $A_{33} = 2$
$\begin{vmatrix} 2 & 2 & 1 \\ 1 & 2 & 1 \\ -1 & 1 & 3 \end{vmatrix} = 2(5) - 2(4) + 1(3)$
$= 10 - 8 + 3$
$= 5$
$\begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} = \frac{1}{5} \begin{pmatrix} 5 & -5 & 0 \\ -4 & 7 & -1 \\ 3 & -4 & 2 \end{pmatrix} \begin{pmatrix} 7 \\ 0 \\ 1 \end{pmatrix} = \frac{1}{5} \begin{pmatrix} 35 & 0 & 0 \\ -28 & 0 & -1 \\ 21 & 0 & 2 \end{pmatrix} = \begin{pmatrix} \frac{35}{5} \\ -\frac{29}{5} \\ \frac{23}{5} \end{pmatrix} = \begin{pmatrix} 7 \\ -\frac{29}{5} \\ \frac{23}{5} \end{pmatrix}$
$\begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} = \begin{pmatrix} 7 \\ -\frac{29}{5} \\ \frac{21}{5} \end{pmatrix}$ La solución del sistema es $X_1 = 7$, $X_2 = -\frac{29}{5}$, $X_3 = \frac{23}{5}$

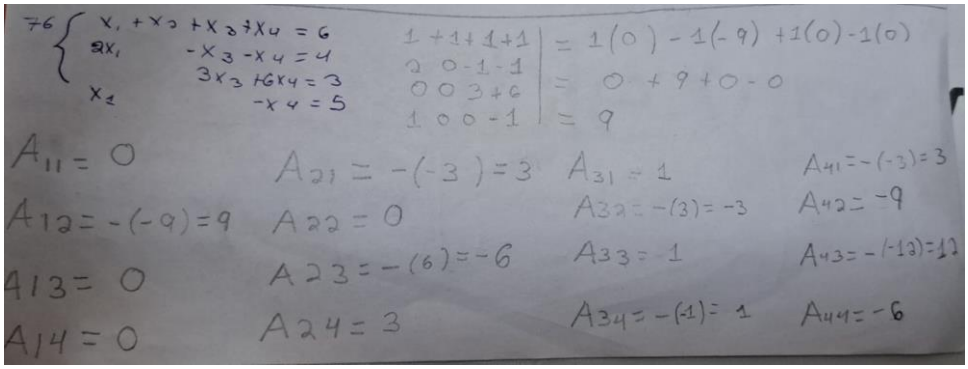
PROBLEMA 74

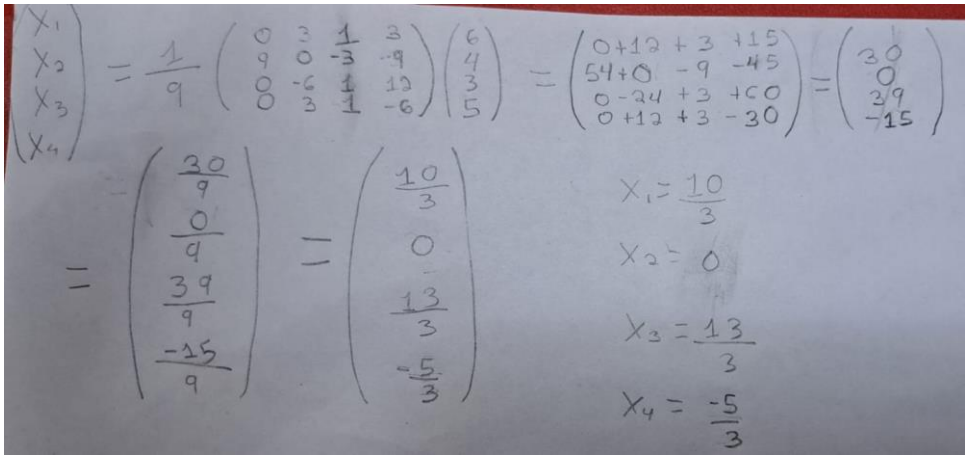

74
2X1 + 5X2 − X3 = −1
4X1 + X2 + 3X3 = 3
−2X1 + 2X2 = 0
A11 = −6 A21 = −2 A31 = 16
A12 = −6 A22 = −2 A32 = −10
A13 = 10 A23 = −14 A33 = −18
2 5 −1 = −2(16) −2(10)
4 1 3 = −32 −20
−2 2 0 = −52
La solucion del sistema es X1 = 0, X2 = 0, X1 = 1

Problema 75

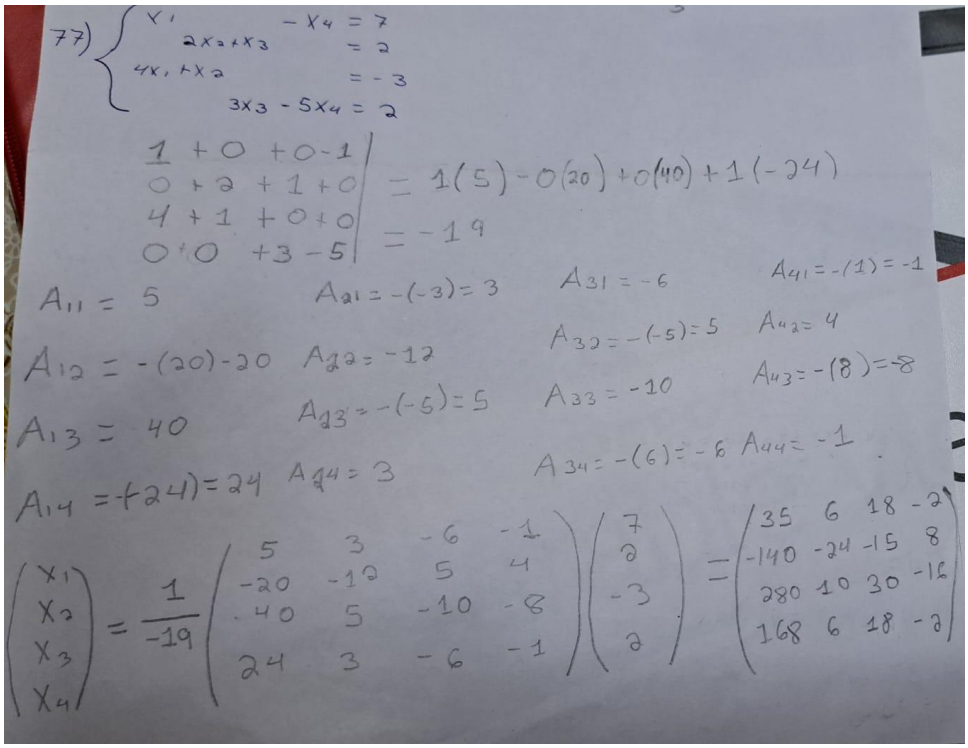

75)
6x1 - 10x2 + 4x3 = -2
10x1 + 7x2 + 5x3 = 3
3x1 + 9x2 + 5x3 = -7
6 - 10 + 4
-10 + 7 + 5
3 + 9 + 5
= 6(-10) + 10(35) + 4(69)
= -60 + 350 + 276
= 566
A11 = -10
A21 = -(-86) = 86
A31 = -78
A12 = -(35) = -35
A22 = 18
A32 = -(-10) = 10
A13 = 69
A23 = -(84) = -84
A33 = 142
1/566 (-10 86 -78 / -35 18 10 / 69 -84 142) (-2 / 3 / -7)
1/566 (20 258 546 / 70 54 -70 / -138 -252 -994) = (824 / 54 / -1384) = (824/566 / 54/566 / -1384/566)
X1 = 412/283
X2 = 27/283
X3 = -692/283

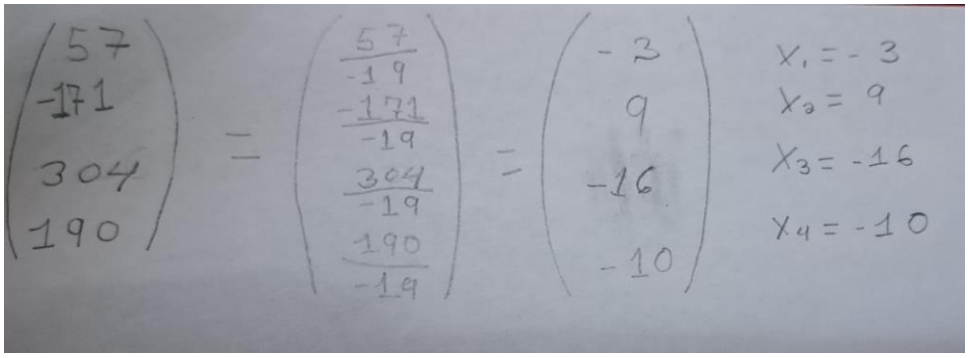
Problema 76


76
x1 + x2 + x3 + x4 = 6
2x1 - x3 - x4 = 4
3x3 + 6x4 = 3
x2 - x4 = 5
1 + 1 + 1 + 1
2 0 -1 -1
0 0 3 +6
1 0 0 -1
= 1(0) - 1(-9) + 1(0) - 1(0)
= 0 + 9 + 0 - 0
= 9
A11 = 0
A21 = -(-3) = 3
A31 = 1
A41 = -(-3) = 3
A12 = -(-9) = 9
A22 = 0
A32 = -(3) = -3
A42 = -9
A13 = 0
A23 = -(6) = -6
A33 = 1
A43 = -(-12) = 12
A14 = 0
A24 = 3
A34 = -(-1) = 1
A44 = -6


(x1 / x2 / x3 / x4) = 1/9 (0 3 1 3 / 9 0 -3 -9 / 0 -6 1 12 / 0 3 1 -6) (6 / 4 / 3 / 5)
= (0+12+3+15 / 54+0-9-45 / 0-24+3+60 / 0+12+3-30) = (30 / 0 / 39 / -15)
= (30/9 / 0/9 / 39/9 / -15/9) = (10/3 / 0 / 13/3 / -5/3)
X1 = 10/3
X2 = 0
X3 = 13/3
X4 = -5/3

Problema 77


77)
$x_1 - x_4 = 7$
$2x_2 + x_3 = 2$
$4x_1 + x_2 = -3$
$3x_3 - 5x_4 = 2$
$\begin{vmatrix} 1 & 0 & 0 & -1 \\ 0 & 2 & 1 & 0 \\ 4 & 1 & 0 & 0 \\ 0 & 0 & 3 & -5 \end{vmatrix} = 1(5) - 0(20) + 0(40) + 1(-24) = -19$
$A_{11} = 5$
$A_{21} = -(-3) = 3$
$A_{31} = -6$
$A_{41} = -(1) = -1$
$A_{12} = -(20) - 20$
$A_{22} = -12$
$A_{32} = -(-5) = 5$
$A_{42} = 4$
$A_{13} = 40$
$A_{23} = -(-5) = 5$
$A_{33} = -10$
$A_{43} = -(8) = -8$
$A_{14} = +24) = 24$
$A_{24} = 3$
$A_{34} = -(6) = -6$
$A_{44} = -1$
$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \frac{1}{-19} \begin{pmatrix} 5 & 3 & -6 & -1 \\ -20 & -12 & 5 & 4 \\ 40 & 5 & -10 & -8 \\ 24 & 3 & -6 & -1 \end{pmatrix} \begin{pmatrix} 7 \\ 2 \\ -3 \\ 2 \end{pmatrix} = \begin{pmatrix} 35 & 6 & 18 & -2 \\ -140 & -24 & -15 & 8 \\ 280 & 10 & 30 & -16 \\ 168 & 6 & 18 & -2 \end{pmatrix}$


$\begin{pmatrix} 57 \\ -171 \\ 304 \\ 190 \end{pmatrix} = \begin{pmatrix} \frac{57}{-19} \\ \frac{-171}{-19} \\ \frac{304}{-19} \\ \frac{190}{-19} \end{pmatrix} = \begin{pmatrix} -3 \\ 9 \\ -16 \\ -10 \end{pmatrix}$
$x_1 = -3$
$x_2 = 9$
$x_3 = -16$
$x_4 = -10$