CORREGIR DEBERES (Pág 44)

6b) $\begin{cases} -y+z=1 \\ 9z=2 \\ 3x-y+z=3 \end{cases}$ $z=2/9$ $y=\frac{2}{9}-1=-7/9$

$3x=3-\frac{7}{9}-\frac{2}{9}=2$ $x=2/3$

CLASIF: SCD $\Rightarrow$ 7! Sol

SOL $(x,y,z)=(2/3,-7/9,2/9)$

I.6 3 planos que se cortan en un pto



Ampliar página

oct 2-13:17

c) $\begin{cases} -2x=0 \\ x+y-z=9 \\ x-z=2 \end{cases}$ $x=0$ $y=9-0+(-2)=7$ $z=-2$

CLASIF S.C.D $\Rightarrow$ 7! Sol

SOL $(x,y,z)=(0,7,-2)$

I.6 3 planos que se cortan en un pto



oct 2-13:18

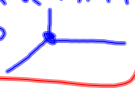
d) $\begin{cases} 2x-3y+z=0 \\ 3x-y=0 \\ 2y=1 \end{cases}$ $3x=\frac{1}{2}$ $x=\frac{1}{6}$ $y=\frac{1}{2}$

$\frac{1}{3}-\frac{3}{2}+z=0$ $z=-\frac{1}{3}+\frac{3}{2}=\frac{7}{6}$

CLASIF: SCD $\Rightarrow$ 7! Sol

SOL $(x,y,z)=\left(\frac{1}{6},\frac{1}{2},\frac{7}{6}\right)$

I.6: 3 planos que se cortan en un pto



oct 2-13:19

7a) $x-y+z=2$

$y=5 \rightarrow y=5$

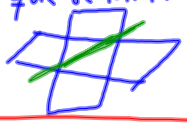
$x=\alpha$

$z=2-\alpha+5=7-\alpha$

CLASIF S.C.I $\Rightarrow$ ∞ infinitas sol.

SOL $(x,y,z)=(\alpha,5,7-\alpha)$ $\forall \alpha \in \mathbb{R}$

I.6 2 planos que se cortan en una recta



oct 2-13:21

7b) $\begin{cases} 2x+y+z=4 \\ y+z=2 \end{cases}$

$y=\alpha$

$z=2-\alpha$

~~$2x=4-\alpha-2+\alpha$~~ $x=1$

CLASIF: SCI $\Rightarrow$ ∞ mf sol

SOL: $(x,y,z)=(1,\alpha,2-\alpha)$ $\forall \alpha \in \mathbb{R}$

I.6: 2 planos que se cortan en una recta



oct 2-13:23

c) $\begin{cases} x+y-z+t=4 \\ y+z-t=3 \\ z+2t=1 \end{cases}$

$t=\alpha$

$z=1-2\alpha$

$y=3-1+2\alpha+\alpha=3\alpha+2$

$x=4-3\alpha-2+1-2\alpha-\alpha$

$=3-6\alpha$

CLASIF: S.C.I $\Rightarrow$ ∞ mf sol

SOL: $(x,y,z,t)=(3-6\alpha,3\alpha+2,1-2\alpha,\alpha)$ $\forall \alpha \in \mathbb{R}$

I.6: 3 hiperplanos que se cortan en una recta

oct 2-13:24

d) $\begin{cases} x+y-t=2 \\ y+z=4 \\ y+t-z=4 \end{cases}$

$y=\alpha$

$z=4-\alpha$

$t=4-\alpha+4-\alpha=5-2\alpha$

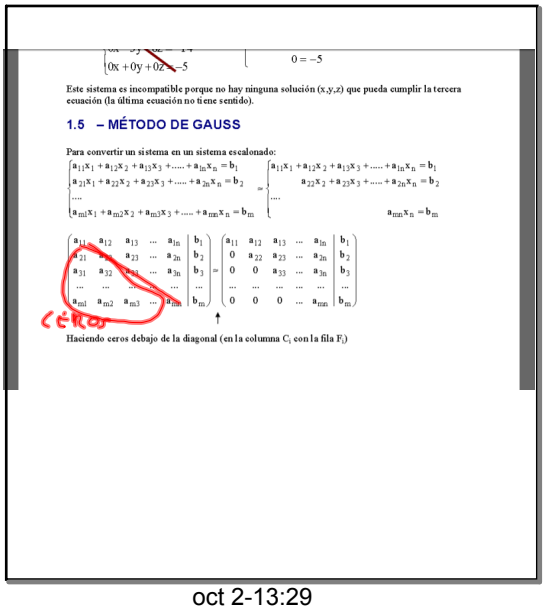
$x=2-\alpha+5-2\alpha=7-3\alpha$

CLASIF SCI $\Rightarrow \infty$ SOL

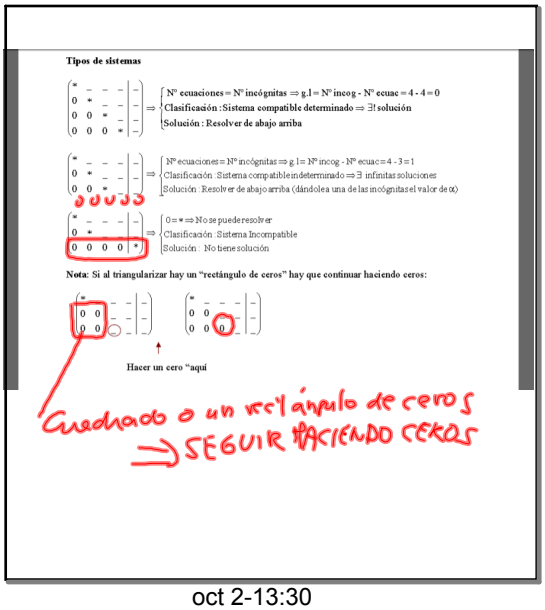
SOL : $(x,y,z,t)=(7-3\alpha,\alpha,4-\alpha,5-2\alpha)$ $\forall \alpha \in \mathbb{R}$

I.G : 3 hiperplanos que se cortan en una recta

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oct 2-13:29



oct 2-13:30

EJEMPLO 1

$\begin{cases} x+y-2z=9 \\ 2x-y+4z=4 \\ 2x-y+6z=-1 \end{cases}$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 2 & -1 & 4 & 4 \\ 2 & -1 & 6 & -1 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & -3 & 10 & -19 \end{array}\right)$

$F_2=F_2-2F_1$ $\quad F_3=F_3-F$

$F_3=F_3-2F_1$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & 0 & 2 & -5 \end{array}\right) \Rightarrow \begin{cases} x+y-2z=9 \\ -3y+8z=-14 \\ 2z=-5 \end{cases}$

$z=-5/2 \rightarrow y=-2 \rightarrow x=6$

CLASIF SCD $\Rightarrow$ 1 SOL

SOL : $(x,y,z)=(6,-2,-5/2)$

I.G : 3 planos que se cortan en un pto

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$\begin{cases} x+y-2z=9 \\ 2x-y+4z=4 \\ 4x+y=22 \end{cases}$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 2 & -1 & 4 & 4 \\ 4 & 1 & 0 & 22 \end{array}\right)$

$F_2=F_2-2F_1$

$F_3=F_3-4F_1$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & -3 & 8 & -14 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & 0 & 0 & 0 \end{array}\right)$

$F_3=F_3-F_2$

$\begin{cases} x+y-2z=9 \\ -3y+8z=-14 \end{cases}$ $\quad z=\alpha \rightarrow y=\frac{8\alpha+14}{3}$

$x=\frac{13-2\alpha}{3}$

CLASIF SCI $\Rightarrow \infty$ SOL

SOL $(x,y,z)=\left(\frac{13-2\alpha}{3},\frac{8\alpha+14}{3},\alpha\right)$ $\forall \alpha \in \mathbb{R}$

I.G 3 planos que se cortan en una recta

oct 2-13:38

$\begin{cases} x+y-2z=9 \\ 2x-y+4z=4 \\ 2x-y+4z=-1 \end{cases}$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 2 & -1 & 4 & 4 \\ 2 & -1 & 4 & -1 \end{array}\right)$

$F_2=F_2-2F_1$

$F_3=F_3-2F_1$

$\left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & -3 & 8 & -19 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & -2 & 9 \\ 0 & -3 & 8 & -14 \\ 0 & 0 & 0 & -5 \end{array}\right)$

$F_3=F_3-F_2$

$\begin{cases} x+y-2z=9 \\ -3y+8z=-14 \\ 0=-5 \end{cases}$ ✗

CLASIF SI $\Rightarrow$ ∄ SOL

I.G 3 planos que no se cortan

oct 2-13:42

$\begin{cases} x+y+z=3 \\ 2x+2y+z=5 \\ 3x+3y-z=5 \end{cases}$ $\left(\begin{array}{ccc|c} 1 & 1 & 1 & 3 \\ 2 & 2 & 1 & 5 \\ 3 & 3 & -1 & 5 \end{array}\right) \sim$

$F_2 = F_2 - 2F_1$

$F_3 = F_3 - 3F_1$

$\left(\begin{array}{ccc|c} 1 & 1 & 1 & 3 \\ 0 & 0 & -1 & -1 \\ 0 & 0 & -4 & -4 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & 1 & 3 \\ 0 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 \end{array}\right)$

$F_3 = F_3 - 4F_2$

$\begin{cases} x+y+z=3 \\ -z=-1 \end{cases}$ $z=1$

$y=\alpha$

$x=3-\alpha-1=2-\alpha$

CLASIF SCI $\Rightarrow \infty^1$ sol

SOL: $(x,y,z)=(2-\alpha,\alpha,1)\ \forall \alpha \in \mathbb{R}$

I.G 3 planos que se cortan en una recta.

oct 2-13:44

DEBERES (Pag 44)

(10) a) b)

(11) a)

(12) c) d)

oct 2-13:56