CORREGIR DEBERES

10) a) $\begin{cases} x+y=1 \\ y+z=-2 \\ x+z=3 \end{cases}$

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

$F_3 = F_3 - F_1$ $\quad F_3 = F_3 + F_2$

$\left(\begin{array}{ccc|c} 1 & 1 & 0 & 1 \\ 0 & 1 & 1 & -2 \\ 0 & 0 & 2 & 0 \end{array}\right) \Rightarrow \begin{array}{l} x+y=1 \quad x=3 \\ y+z=-2 \quad y=-2 \\ 2z=0 \Rightarrow z=0 \end{array}$

CLASIF: SCD $\Rightarrow \exists!$ Sol.

SOL $(x,y,z)=(3,-2,0)$

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



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10 b) $\begin{cases} x+y+z=0 \\ x+3y+2z=0 \\ 2x+4y+3z=0 \end{cases}$

$\left(\begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 1 & 3 & 2 & 0 \\ 2 & 4 & 3 & 0 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 0 & 2 & 1 & 0 \\ 0 & 2 & 1 & 0 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 1 & 1 & 0 \\ 0 & 2 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{array}\right)$

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

$F_3 = F_3 - 2F_1$

$\begin{cases} x+y+z=0 \\ 2y+z=0 \end{cases}$ $\quad y=\alpha$

$z=-2\alpha$

$x=-\alpha+(\alpha=\alpha$

CLASIF SCI $\Rightarrow \exists$ infs sol

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

I.G 3 planos que se cortan en una recta

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11 a) $\begin{cases} 2x+5y=16 \\ x+3y-2z=-2 \\ x+z=4 \end{cases}$

$\left(\begin{array}{ccc|c} 1 & 0 & 1 & 4 \\ 1 & 3 & -2 & -2 \\ 2 & 5 & 0 & 16 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 0 & 1 & 4 \\ 0 & 3 & -3 & -6 \\ 0 & 5 & -2 & 8 \end{array}\right) \sim$

$F_2 = F_2 - F_1$ $\quad F_3 = 3F_3 - 5F_2$

$F_3 = F_3 - 2F_1$

$\left(\begin{array}{ccc|c} 1 & 0 & 1 & 4 \\ 0 & 3 & -3 & -6 \\ 0 & 0 & 9 & 54 \end{array}\right)$ $\quad \begin{array}{l} x+z=4 \\ y-z=-2 \\ 9z=54 \rightarrow z=6 \end{array}$

$y=4$; $x=-2$

CLASIF SCD $\Rightarrow \exists!$ Sol

SOL $(x,y,z)=(-2,4,6)$

I.G 3 planos que se cortan en un pto

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

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

$F_2 = F_2 + 2F_1$

$F_3 = F_3 + F_1$

$\left(\begin{array}{ccc|c} -1 & 2 & -1 & 1 \\ 0 & 3 & 0 & 3 \\ 0 & 0 & 0 & 5 \end{array}\right)$ $\quad \begin{array}{l} -x+2y-z=1 \\ 3y=3 \\ 0=5 \rightarrow \nexists \text{ sol} \end{array}$

CLASIF S I $\Rightarrow \nexists$ Sol

I.G 3 planos que no se cortan

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12 d) $2x-3y+z=0$, $3x-y=0$, $4x+y-z=0$

$$\left(\begin{array}{ccc|c} z & y & x & \\ -3 & 2 & 1 & 0 \\ 3 & -1 & 3 & 0 \\ 1 & 1 & 4 & 0 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & -3 & 2 & 0 \\ 0 & -1 & 3 & 0 \\ 0 & -2 & 6 & 0 \end{array}\right)$$

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

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

$z - 3y + 2x = 0$

$-y + 3x = 0$

$x = \alpha$

$y = 3\alpha$

$z = 9\alpha - 2\alpha = 7\alpha$

CLASIF SCI $\Rightarrow \exists \infty$ SOL

SOL $(x,y,z) = (\alpha, 3\alpha, 7\alpha)$ $\forall \alpha \in \mathbb{R}$

$\left(\frac{\alpha}{3}, \alpha, \frac{7\alpha}{3}\right)$

I.6 3 planos que se cortan en una recta

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DEBERES

Sistema: 8a) 23

Problemas: 13b) 24, 14d) 25, 14b) 26

8a) $3x-2y=5$, $x+y=0$, $x-y=2$

$$\left(\begin{array}{cc|c} 1 & 1 & 0 \\ 1 & -2 & 2 \\ 3 & -2 & 5 \end{array}\right) \sim$$

$F_2 = F_2 - F_1$, $F_3 = F_3 - 3F_1$

$$\left(\begin{array}{cc|c} 1 & 1 & 0 \\ 0 & -2 & 2 \\ 0 & -5 & 5 \end{array}\right) \sim \left(\begin{array}{cc|c} 1 & 1 & 0 \\ 0 & -2 & 2 \\ 0 & 0 & 0 \end{array}\right)$$

$F_3 = 2F_3 - 5F_2$

$\begin{cases} x+y=0 \\ -2y=2 \end{cases}$ $\quad x=1$, $y=-1$

Clasificación: SCD $\Rightarrow \exists!$ sol.

Solución $(x,y) = (1,-1)$

Ig: 2 rectas que se cortan en un pto

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