

CORREGIR DEBERES

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d) $A = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ $B = (2, 3)$

No, pape no tienen la misma dim

$A_{2 \times 1} \neq B_{1 \times 2}$ $A = B^t$
 $B = A^t$

b) $AB = A_{2 \times 1} \cdot B_{1 \times 2} = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \begin{pmatrix} 2 & 3 \end{pmatrix} = \begin{pmatrix} 4 & 6 \\ 6 & 9 \end{pmatrix}$

$BA = B_{1 \times 2} A_{2 \times 1} = (2 \ 3) \begin{pmatrix} 2 \\ 3 \end{pmatrix} = 4 + 9 = 13$

$A + B \neq$

$A^t - B = (2 \ 3) - (2 \ 3) = (0 \ 0) = O_{1 \times 2}$

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(1) a) $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$

MOD01 $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} x & y \\ z & t \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

$\begin{pmatrix} x+z & y+t \\ z & t \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

$\begin{cases} x+z=1 \\ y+t=0 \\ z=0 \\ t=1 \end{cases} \quad \begin{cases} x+z=1 \\ z=0 \rightarrow x=1 \\ y+t=0 \rightarrow y=-1 \\ t=1 \end{cases}$

$A^{-1} = \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix}$

MOD02 $\begin{pmatrix} 1 & 1 & | & 1 & 0 \\ 0 & 1 & | & 0 & 1 \end{pmatrix} \sim \begin{pmatrix} 1 & 0 & | & 1 & -1 \\ 0 & 1 & | & 0 & 1 \end{pmatrix}$

$F_1 = F_1 - F_2$ $A^{-1} = \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix}$

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b) $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$

MOD02

$\begin{pmatrix} 1 & 2 & | & 1 & 0 \\ 3 & 4 & | & 0 & 1 \end{pmatrix} \sim \begin{pmatrix} 1 & 2 & | & 1 & 0 \\ 0 & -2 & | & -3 & 1 \end{pmatrix}$

$F_2 = F_2 - 3F_1$ $F_1 = F_1 + F_2$

$\begin{pmatrix} 1 & 0 & | & -2 & 1 \\ 0 & -2 & | & -3 & 1 \end{pmatrix} \sim \begin{pmatrix} 1 & 0 & | & -2 & 1 \\ 0 & 1 & | & 3/2 & -1/2 \end{pmatrix}$

$F_2 = F_2 / -2$

$A^{-1} = \begin{pmatrix} -2 & 1 \\ 3/2 & -1/2 \end{pmatrix}$

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c) $\begin{pmatrix} 1 & 2 \\ -2 & -4 \end{pmatrix}$

$\begin{pmatrix} 1 & 2 & | & 1 & 0 \\ -2 & -4 & | & 0 & 1 \end{pmatrix} \sim \begin{pmatrix} 1 & 2 & | & 1 & 0 \\ 0 & 0 & | & 2 & 1 \end{pmatrix}$

$F_2 = F_2 + 2F_1$ $\nexists A^{-1}$

A singular

~~$A = \begin{pmatrix} 0 & 1 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} 1 & 2 & | & 1 & 0 \\ 0 & 1 & | & 0 & 1 \end{pmatrix}$~~

$\begin{pmatrix} 0 & 1 & | & 1 & 0 \\ 1 & 2 & | & 0 & 1 \end{pmatrix} \xrightarrow{F_1 \leftrightarrow F_2} \begin{pmatrix} 1 & 2 & | & 0 & 1 \\ 0 & 1 & | & 1 & 0 \end{pmatrix}$

$A^{-1} = \begin{pmatrix} -2 & 1 \\ 1 & 0 \end{pmatrix}$

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$$\begin{pmatrix} 1 & 0 & -1 \\ 0 & 2 & 3 \\ 3 & -1 & 1 \end{pmatrix} A^{-1}?$$

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

$R_3 \leftarrow R_3 - R_1$

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

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

$$\left(\begin{array}{ccc|ccc} 1 & 0 & -1 & 1 & 0 & 0 \\ 0 & 2 & 3 & 0 & 1 & 0 \\ 0 & 0 & 7 & -2 & 1 & 2 \end{array} \right) \sim \left(\begin{array}{ccc|ccc} 1 & 0 & -1 & 1 & 0 & 0 \\ 0 & 2 & 3 & 0 & 1 & 0 \\ 0 & 0 & 7 & -2 & 1 & 2 \end{array} \right) \sim \left(\begin{array}{ccc|ccc} 7 & 0 & 0 & 5 & 1 & 2 \\ 0 & -14 & 0 & -6 & -4 & 6 \\ 0 & 0 & 7 & -2 & 1 & 2 \end{array} \right)$$

$F_2 = -7F_2 + 3F_3$ $F_1 = F_1/7$
 $F_2 = F_2/14$ $F_3 = F_3/7$

$$\left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 1/7 & 1/7 & 2/7 \\ 0 & 1 & 0 & 3/7 & 2/7 & -3/7 \\ 0 & 0 & 1 & -2/7 & 1/7 & 2/7 \end{array} \right) \rightarrow A^{-1}$$

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$$\left(\begin{array}{ccc} 5 & 0 & 2 \\ 0 & 0 & 1 \\ 3 & 1 & 0 \end{array} \right)$$

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$$\begin{pmatrix} 1 & 0 & 2 \\ 2 & 1 & 3 \\ 3 & 1 & 5 \end{pmatrix}$$

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