

Problema

Donades les matrius $A = \begin{pmatrix} 1 & 2 & 1 \\ 1 & 3 & 1 \\ 0 & 1 & 3 \end{pmatrix}$ i $B = \begin{pmatrix} 0 & -1 & 2 \\ 1 & 0 & -1 \\ 2 & 1 & 0 \end{pmatrix}$

- a) Calcula A^{-1}
 - b) Determina la matriu X tal que $AX = A + B$
- Pau's València Juny 2016. Ciències Socials.*

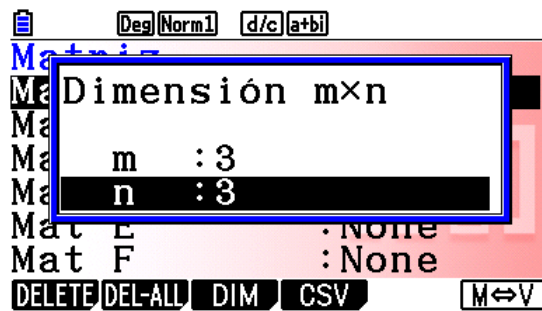
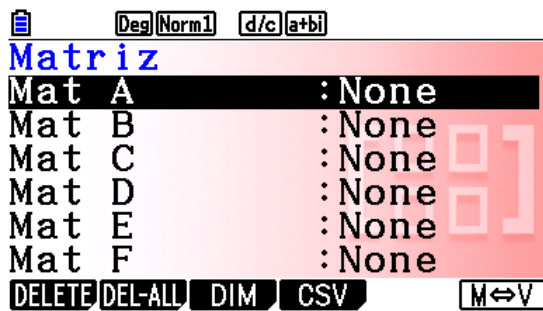
Solució:

La matriu A té inversa s $\det(A) \neq 0$

Obrim el *Menú Ejec-Mat*

Definim les matrius A i B:

1 **EXE** **F3** **F3** **3** **EXE** **3** **EXE**

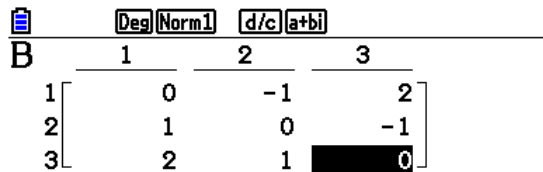


Introduïm el coeficients:



3

ROW-OP **ROW** **COLUMN** **EDIT**

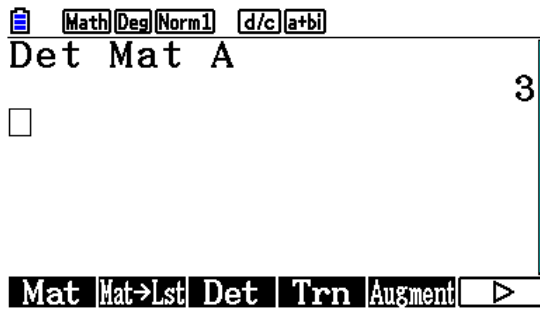


0

ROW-OP **ROW** **COLUMN** **EDIT**

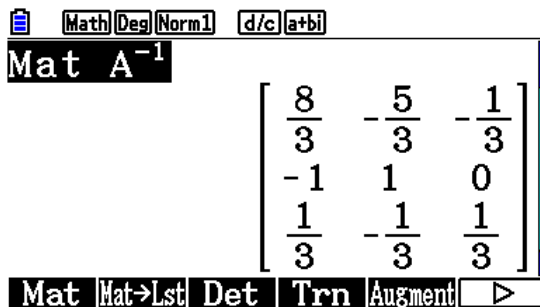
Calculem $\det(A)$:

EXIT **OPTN** **F2** **F3** **F1** **ALPHA** **X,θ,T** **EXE**



$\det(A) = 3 \neq 0$, aleshores, la matriu A té inversa.

Calculem la matriu inversa



$$A^{-1} = \begin{pmatrix} \frac{8}{3} & -\frac{5}{3} & -\frac{1}{3} \\ -1 & 1 & 0 \\ \frac{1}{3} & -\frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

b)

$$AX = A + B.$$

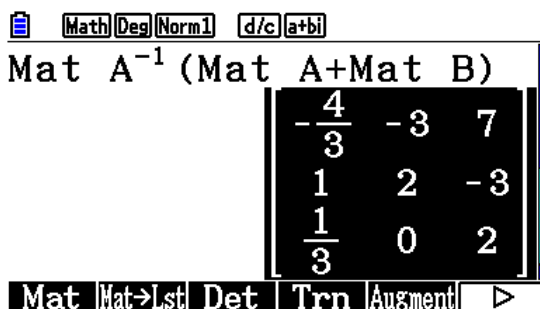
Multiplicam per A^{-1}

$$A^{-1} \cdot AX = A^{-1}(A + B)$$

$$I \cdot X = A^{-1}(A + B)$$

$$X = A^{-1}(A + B)$$

Calculem X:



$$X = \begin{pmatrix} -\frac{4}{3} & -3 & 7 \\ 1 & 2 & -3 \\ \frac{1}{3} & 0 & 2 \end{pmatrix}$$