Práctico 1

Ej 1:

a) $A = \begin{pmatrix} 10 & 15 \\ 7 & 15 \end{pmatrix}$

b) $A = \begin{pmatrix} 2 & -3 \\ -5 & 4 \\ 4 & 5 \end{pmatrix}$

c) $A = \begin{pmatrix} 1 & 1 & 1 \\ 0 & 2 & 2 \\ 0 & 0 & 3 \end{pmatrix}$

d) $A = \begin{pmatrix} 1 & 0 \\ 3 & 2 \\ 5 & 4 \end{pmatrix}$

$A = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}$

Ej 2:

a) $3A = \begin{pmatrix} 3 \\ 6 \\ 9 \\ 12 \end{pmatrix}$ $-2C = (-2 \ -4 \ -6 \ -9)$

$D+E = \begin{pmatrix} 1 & 3 & 5 \\ 0 & 0 & -3 \end{pmatrix}$; $B-G = \begin{pmatrix} 0 & 2-\sqrt{3} \\ 3-\sqrt{3} & 2 \end{pmatrix}$

B+A → NO son del mismo tamaño

$(B^T)^T = B$ $3A+C^T = 4A = \begin{pmatrix} 4 \\ 8 \\ 12 \\ 16 \end{pmatrix}$

b) A.C; B.D; B.E; BF; BG; FD; FE; FG; GB; GD; GE; GF y las cuadradas al cuadrado

Ej 3

$$F.D = \begin{pmatrix} 1/2 & 1/2 \\ 1/4 & -1/2 \end{pmatrix} \begin{pmatrix} 1 & 2 & 3 \\ -1 & -2 & -3 \\ 0 & 0 & 0 \\ 3/4 & 3/2 & 9/4 \end{pmatrix}$$

$$G.E = \begin{pmatrix} 1 & \sqrt{2} \\ \sqrt{3} & 2 \end{pmatrix} \begin{pmatrix} 0 & 1 & 2 \\ \sqrt{2} & 1+\sqrt{2} & 2 \\ 2 & \sqrt{3}+1 & 2\sqrt{3} \end{pmatrix}$$

Ej 3: Recordar transponer

a) Para que B sea simétrica primero tiene que ser cuadrada. Lo otro es que $a_{ij} = a_{ji} \quad \forall\, i \neq j$

b) Igual pero $a_{ij} = -a_{ij} \quad \forall\, i \neq j$ y $a_{ii} = 0$

Ej 4: Para demostrar: plantear las matrices

2) $A = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \quad B = \begin{pmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{pmatrix}$

$$(A+B)^T = \begin{pmatrix} a_{11}+b_{11} & a_{12}+b_{12} & a_{13}+b_{13} \end{pmatrix}$$

2) $(A.B)^T = \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{pmatrix} = \begin{pmatrix} a_{11}b_{11}+a_{12}b_{21} & a_{11}b_{12}+a_{12}b_{22} \\ a_{21}b_{11}+a_{22}b_{21} & a_{21}b_{12}+a_{22}b_{22} \end{pmatrix}^T =$

$= \begin{pmatrix} a_{11}b_{11}+a_{12}b_{21} & a_{21}b_{11}+a_{22}b_{21} \\ a_{11}b_{12}+a_{12}b_{22} & a_{21}b_{12}+a_{22}b_{22} \end{pmatrix}$; $B^T.A^T = \begin{pmatrix} b_{11} & b_{21} \\ b_{12} & b_{22} \end{pmatrix} \begin{pmatrix} a_{11} & a_{21} \\ a_{12} & a_{22} \end{pmatrix}$

Ej 5:

[redacted]

$$\begin{cases} a+b=2 \rightarrow b+4+b=2 \Rightarrow 2b=2-4=-2 \Rightarrow b=-1 \\ a-b=4 \rightarrow a=b+4 \rightarrow a=-1+4=3 \end{cases}$$

[redacted]

$$\left(\begin{array}{cc|c} 1 & 1 & 2 \\ 1 & -1 & 4 \end{array}\right) \xrightarrow{F_2-F_1} \left(\begin{array}{cc|c} 1 & 1 & 2 \\ 0 & -2 & 2 \end{array}\right) \xrightarrow{F_2/-2} \left(\begin{array}{cc|c} 1 & 1 & 2 \\ 0 & 1 & -1 \end{array}\right) \quad (-2b=2) \quad (b=-1)$$

$$\left(\begin{array}{cc|c} 1 & 1 & 2 \\ 0 & 1 & -1 \end{array}\right) \xrightarrow{F_1-F_2} \left(\begin{array}{cc|c} 1 & 0 & +3 \\ 0 & 1 & -1 \end{array}\right)$$

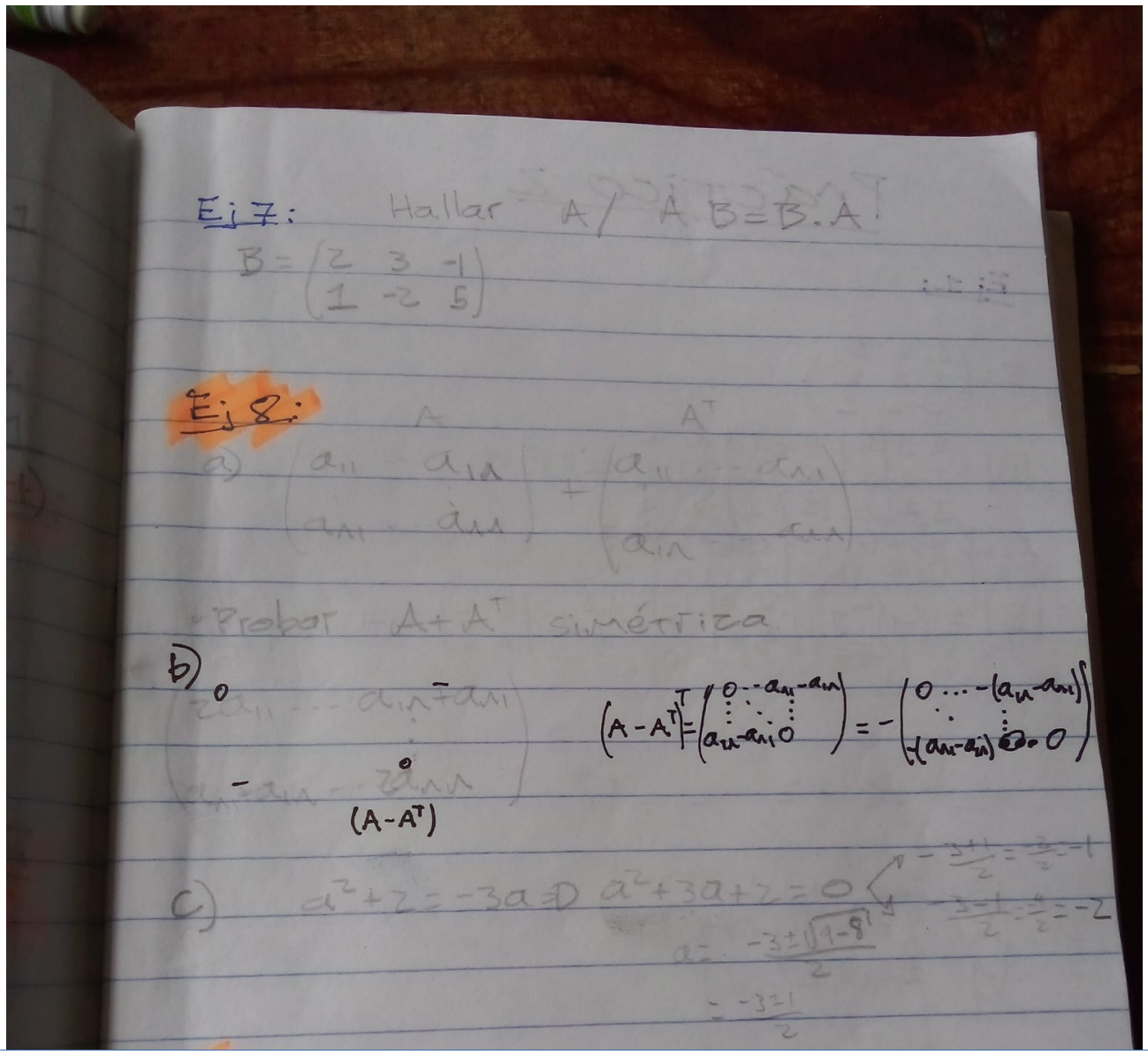
Ej 6:

e)

$$2A - 4X = \begin{pmatrix} 1 & 3 \\ 2 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 10 & 4 \\ 2 & 0 \end{pmatrix} - \begin{pmatrix} 1 & 3 \\ 2 & 1 \end{pmatrix} = 4X$$

$$\begin{pmatrix} 9 & -7 \\ 0 & -1 \end{pmatrix} = 4X \Rightarrow X = \begin{pmatrix} 1/4 & -7/4 \\ 0 & -1/4 \end{pmatrix}$$



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