3) a) $\forall A, B \in E$, $\forall \lambda \in \mathbb{R}$ $\Rightarrow A^T = -A$, $B^T = -B$

$\Rightarrow (A+\lambda B)^T = -A + \lambda(-B) = -(A+\lambda B)$

$\Rightarrow A+\lambda B \in E \Rightarrow$ <u>OUI</u>

$$\boxed{E = \mathrm{Vect}\left(\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}\right)}$$

une base de E

b) $\forall A, B \in F$, $\forall \lambda \in \mathbb{R}$ $\Rightarrow A_{11} = A_{22}$ et $B_{11} = B_{22}$

$\Rightarrow (A+\lambda B)_{11} = A_{11} + \lambda B_{11} = A_{22} + \lambda B_{22} =$

$= (A+\lambda B)_{22} \Rightarrow A+\lambda B \in F \Rightarrow$ <u>OUI</u>

$$\boxed{F = \mathrm{Vect}\left(\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}, \begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}\right)}$$

c) $\begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix} \in G$, $(-1)\begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix} = \begin{pmatrix} -2 & 0 \\ 0 & -1 \end{pmatrix} \notin G$

$\Rightarrow$ <u>NON</u>