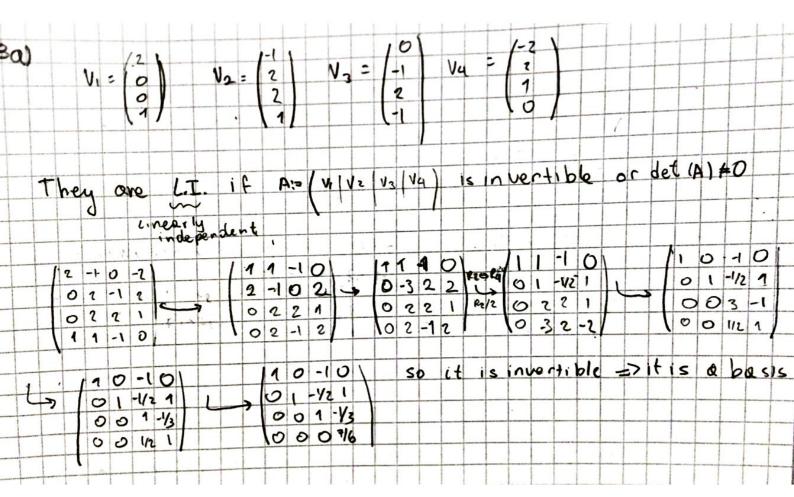


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Problem 2 het the matrix form and perform a Gaussian Climination. $\begin{pmatrix} 2 & -2 & \alpha & | & -2 \\ 4 & -4 & | & 12 & | & -4 \\ 2 & \alpha & o & | & 2 \end{pmatrix} \implies \begin{pmatrix} 2 & -2 & \alpha & | & -2 \\ o & o & | & 12 - 2\alpha & | & 0 \\ 2 & \alpha & o & | & 2 \end{pmatrix}$ $2x_1 - 2x_2 + \alpha x_3 = -2$ $(\alpha+2) n_2 - \alpha n_3 = 4$ $(12-2\alpha) n_3 = 0$ for $\alpha = 6$, we have as to be a free variable (any value mill satisfy its equation), so we have infinitely many solutions. $\alpha = -2$ leads to a contradiction between equations, so it has no solutions. Everything else has a unique solution. (I solution)



(3)(b) By way of contradiction, assume A, B are non-singular.

This means that there does not exist a V such that AV = 0 or BV = 0 aside from $V \neq 0$. ABV = 0 => AZO. Since A is non-singular for $\vec{V} \neq 0$, if $\vec{\omega} = \vec{B}^{\dagger}$ and if $\vec{B} = 0$, $\vec{B}\vec{V} = 0$ but $\vec{V} \neq 0$ Hence, contradiction. =) Therefore, either A or B is singular.