$\mathcal{B} = \{v_1, \dots, v_n\}$ base , $\mathcal{B}'$ base, f tl $\qquad$ $\operatorname{Im} A = \operatorname{Cols} A$

$C(E,\mathcal{B}) = \Big((e_1)_{\mathcal{B}} \Big| \cdots \Big| (e_n)_{\mathcal{B}} \Big)$ $\qquad$ $[f]_{\mathcal{B}\mathcal{B}'} = \Big(f(v_1)_{\mathcal{B}'} \Big| \cdots \Big| f(v_n)_{\mathcal{B}'} \Big)$

Mono: iny $(\operatorname{Nu} f = \{0\})$ | Epi: sobre $\qquad$ $[f]_{EE} = C(\mathcal{B},E)\,[f]_{\mathcal{B}\mathcal{B}}\,C(\mathcal{B},E)$

tl: $f: \mathbb{V} \to W$ $\quad \dim \mathbb{V} = \dim \operatorname{Im} f + \dim \operatorname{Nu} f$ $\qquad$ A sdp $\Rightarrow$ $\lrcorner$ sdp

Cholesky: SDP $\quad A = LL^t \ (l_{ii} > 0)$ $\qquad$ SDP: $\ x^t A x > 0$ ó $\det \lrcorner > 0$

A dp $\Rightarrow$ A^t dp ; A sdp $\Rightarrow$ A inversible ; A sdp $\Rightarrow$ A^tA sdp ; A sdp $\Rightarrow$ A tiene LU

G. Sm. $\quad a = v_1 \ , \ b = v_2 - \underbrace{\frac{\langle a, v_2 \rangle}{\|a\|_2^2} \cdot a}_{\text{Proj}_a(v_2)} \ , \ c = v_3 - \underbrace{\frac{\langle a, v_3 \rangle}{\|a\|_2^2} \cdot a}_{\text{Proj}_a(v_3)} - \underbrace{\frac{\langle b, v_3 \rangle}{\|b\|_2^2}\, b}_{\text{Proj}_b(v_3)}$

Householder: $\ H = I - 2uu^t$ con $u = \dfrac{v - w}{\|v - w\|}$ con $\|v\|_2 = \|w\|_2$ y $\|u\| = 1$

$Hv = w$ y $Hw = v$: Reflex. wrt plano ortog. a u

Proyectores: $\ f \circ f = f \ , \ [f]_{\mathcal{B}}^2 = [f]_{\mathcal{B}} \ , \ \operatorname{Nu} f \oplus \operatorname{Im} f = \mathbb{V}$ $\qquad$ $v \in \operatorname{Im} f \Rightarrow f(v) = v$

Proy. Ortog: $\ [P_S]_{EE} = \sum v_i v_i^t \ (v_i \in \text{BON de } S)$ $\qquad$ $\operatorname{Nu} f = \operatorname{Im} f^{\perp}$ Complemento ortog.

$A \cdot v = \lambda v$ $\qquad$ λ^k es aval de A^k con avec. v $\qquad$ $\operatorname{tr} A = \sum \lambda_i$

$\chi_A(\lambda) = \det(\lambda I - A)$ $\qquad$ $A^k = C \cdot D^k \cdot C$ $\qquad$ $\det A = \prod \lambda_i$

$\operatorname{Nu}(\lambda I - A)$ $\qquad$ $\mathcal{B}$ base de avecs $\Rightarrow [f]_{\mathcal{B}\mathcal{B}} = \begin{bmatrix} \lambda_1 & & 0 \\ & \ddots & \\ 0 & & \lambda_n \end{bmatrix}$

$\det A^t = \det A$ $\qquad$ λ aval de $A^t \Rightarrow \lambda$ aval de A

$\det \alpha A = \alpha^n \det A$ $\qquad$ λ aval de $A^{-1} \Rightarrow 1/\lambda$ aval de A $\qquad$ $\|\alpha x\| = |\alpha| \, \|x\|$

$\det AB = \det A \det B$ $\qquad$ λ aval de $A \Rightarrow 2\lambda$ aval de $2A$ $\qquad$ $\|x + y\| \leq \|x\| + \|y\|$

$\det A^{-1} = \dfrac{1}{\det A}$ $\qquad$ $\langle x, ay + bz \rangle = a\langle x, y \rangle + b\langle x, z \rangle$