Esercitazione 14

martedì 4 gennaio 2022 09:09

Esercizio — cambiamenti di base e coordinate

$f = L_A : \mathbb{R}^3 \longmapsto \mathbb{R}^2 \qquad A = \begin{pmatrix} 1 & -1 & 0 \\ 1 & 1 & 2 \end{pmatrix} = M^{can}_{can}(L_A)$

$\begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}, \begin{pmatrix} -1 \\ 1 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix}$ base B di $\mathbb{R}^3$

$\begin{pmatrix} 2 \\ 1 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \end{pmatrix}$ base C di $\mathbb{R}^2$.

Trovare: $M^{can}_{C}(f)$, $M^{B}_{can}(f)$, $M^{B}_{C}(f)$

$M^{can}_{C}(f)$

$\begin{pmatrix} 1 \\ 0 \end{pmatrix} = E^1 = a\begin{pmatrix} 2 \\ 1 \end{pmatrix} + b\begin{pmatrix} 1 \\ 1 \end{pmatrix} = 1 \cdot \begin{pmatrix} 2 \\ 1 \end{pmatrix} - 1\begin{pmatrix} 1 \\ 1 \end{pmatrix} \qquad N^1 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$

$\begin{pmatrix} 0 \\ 1 \end{pmatrix} = E^2 = -\begin{pmatrix} 2 \\ 1 \end{pmatrix} + 2\begin{pmatrix} 1 \\ 1 \end{pmatrix} \qquad N^2 = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$

$N = (N^1, N^2) = \begin{pmatrix} 1 & -1 \\ -1 & 2 \end{pmatrix}$

$M^{can}_{C}(f) = N \cdot A = \begin{pmatrix} 1 & -1 \\ -1 & 2 \end{pmatrix}\begin{pmatrix} 1 & -1 & 0 \\ 1 & 1 & 2 \end{pmatrix} = \begin{pmatrix} 0 & -2 & -2 \\ 1 & 3 & 4 \end{pmatrix}$

$M^{B}_{can}(f) = A \cdot M. \qquad M = \begin{pmatrix} 1 & -1 & 0 \\ 1 & 1 & 0 \\ 2 & 1 & 1 \end{pmatrix}$ vett. di B

$M^{B}_{can}(f) = \begin{pmatrix} 0 & -2 & 0 \\ 6 & 2 & 2 \end{pmatrix}$

quando ho Can in arrivo resta uguale il

$M^{B}_{C}(f) = NAM = \begin{pmatrix} -6 & -4 & -2 \\ 12 & 6 & 4 \end{pmatrix}$