3.26) $L_1 = \left\{ \underbrace{\begin{bmatrix}1\\2\\1\end{bmatrix}}_{v_1}, \underbrace{\begin{bmatrix}2\\1\\3\end{bmatrix}}_{v_2} \right\}$ $\quad m = 2. \quad U = \{u_1, u_2\}$

Sistema ortonormal.

1: $k = 1$

2: $u_1 = \dfrac{v_1}{\|v_1\|} = \dfrac{[1\ 2\ 1]^T}{\sqrt{6}} = \overbrace{\left[\frac{1}{\sqrt{6}}\ \frac{2}{\sqrt{6}}\ \frac{1}{\sqrt{6}}\right]^T}^{u_1}$

3: $U = \{u_1\}$

4: ..... $(k = 1)$

5: $w_2 = v_2 - \langle v_2, u_1 \rangle . u_1$ I $\rightarrow w_2 = [5/6\ \ 2/3\ \ 11/6]^T$

6: $u_2 = \dfrac{w_2}{\underbrace{\|w_2\|}_{\text{II}}} \rightarrow u_2 = \left[\frac{5\sqrt{2}}{18}\ \ \frac{2\sqrt{2}}{9}\ \ \frac{11\sqrt{2}}{18}\right]^T$

⋮

$$\boxed{U = \left\{ \left[\frac{1}{\sqrt{6}}\ \frac{2}{\sqrt{6}}\ \frac{1}{\sqrt{6}}\right]^T, \left[\frac{5}{18}\sqrt{2}\ \ \frac{2\sqrt{2}}{9}\ \ \frac{11}{18}\sqrt{2}\right]^T \right\}}$$

SIST. ORTONORMAL.

IDEM L2 y L3.

Ej.: Si se desea hallar una sist. ortonormal a partir de cualq. conj. de vectores de dim. finita, primero habría que agregar al algoritmo que se busque un conj. LI si no lo es, y luego aplicar el algoritmo como está.

CALCULOS AUX:

I $[2\ 1\ 3]^T - \langle [2\ 1\ 3]^T, [1/\sqrt{6}\ \ 2/\sqrt{6}\ \ 1/\sqrt{6}]^T \rangle . [1/\sqrt{6}\ \ 2/\sqrt{6}\ \ 1/\sqrt{6}]^T =$

$= [2\ 1\ 3]^T - \left(7/\sqrt{6} \cdot [1/\sqrt{6}\ \ 2/\sqrt{6}\ \ 1/\sqrt{6}]^T \right) = [2\ 1\ 3]^T - \left[\frac{7}{6}\ \frac{1}{3}\ \frac{7}{6} \right]^T =$

$= \left[\frac{5}{6}\ \frac{2}{3}\ \frac{11}{6} \right]^T$

II $\|w_2\|^2 = \langle w_2, w_2 \rangle = \frac{25}{36} + \frac{4}{9} + \frac{121}{36} = \frac{146}{36} + \frac{4}{9} = \frac{146+16}{36} = \frac{\cancel{162}^{\cancel{81}^{9}}}{\cancel{36}_{\cancel{18}_{2}}} = \frac{9}{2}.$

$\rightarrow \|w_2\| = \frac{3}{\sqrt{2}}$