Ov10 (6) $W^{\perp}$ f.s $\left(\begin{array}{c|c} -\bar{v}_1- & \uparrow \\ -\bar{v}_2- & 0 \\ & \downarrow \end{array}\right)$

$$W^{\perp}=\left(\begin{array}{ccccc|c} \frac{-1}{\sqrt{2}} & 0 & 0 & 0 & \frac{1}{\sqrt{2}} & 0 \\ \frac{-1}{\sqrt{10}} & \frac{-2}{\sqrt{10}} & \frac{2}{\sqrt{10}} & 0 & \frac{1}{\sqrt{10}} & 0 \end{array}\right)\begin{array}{l}\cdot -\sqrt{2} \\ \cdot -\sqrt{10}\end{array} \sim \left(\begin{array}{ccccc|c} 1 & 0 & 0 & 0 & -1 & 0 \\ 1 & 2 & -2 & 0 & 1 & 0 \end{array}\right)\begin{array}{l}\in D \\ \cdot \frac{1}{2}\end{array}$$

$$\sim \left(\begin{array}{ccccc|c} 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 1 & -1 & 0 & 1 & 0 \end{array}\right) \Rightarrow \begin{cases} x_1 = x_5 \\ x_2 = x_3 - x_5 \end{cases} \quad \begin{array}{l} x_3 = s,\ x_4 = t, \\ x_5 = u, \end{array} \quad s,t,u \in \mathbb{R}$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix} = s\begin{bmatrix} 0 \\ 1 \\ 1 \\ 0 \\ 0 \end{bmatrix} + t\begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix} + u\begin{bmatrix} 1 \\ -1 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

$\bar{u}_2$ $\bar{u}_1$ $\bar{u}_3$

$$W^{\perp} = \operatorname{span}\left\{\begin{bmatrix} 0 \\ 1 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \\ 0 \\ 1 \end{bmatrix}\right\} \qquad \bar{v}_1 = \frac{\bar{u}_1}{|\bar{u}_1|} = (0,0,0,1,0) \qquad U_1 = \{\bar{v}_1\}$$

$$\bar{v}_2 = \frac{\operatorname{Perp}_{U_1}(\bar{u}_2)}{|\operatorname{Perp}_{U_1}(\bar{u}_2)|}$$

$$\operatorname{Perp}_{U_1}(\bar{u}_2) = \bar{u}_2 - \operatorname{Proy}_{U_1}(\bar{u}_2)$$

$$= (0,1,1,0,0) - \left((\bar{u}_2 \cdot \bar{v}_1)\cdot v_1\right) = (0,1,1,0,0) - 0$$

$$|\operatorname{Perp}_{U_1}(\bar{u}_2)| = \sqrt{2} \Rightarrow \bar{v}_2 = \frac{1}{\sqrt{2}}(0,1,1,0,0) \qquad U_2 = \{\bar{v}_1, \bar{v}_2\}$$

$$\bar{v}_3 = \frac{\operatorname{Perp}_{U_2}(\bar{u}_3)}{|\operatorname{Perp}_{U_2}(\bar{u}_3)|} = \frac{\bar{u}_3 - \left((\bar{u}_3 \cdot \bar{v}_1)\,v_1 + (\bar{u}_3 \cdot \bar{v}_2)\bar{v}_2\right)}{|\operatorname{Perp}_{U_2}(\bar{u}_3)|} =$$

$$\frac{(1,-1,0,0,1) + \frac{1}{2}(0,1,1,0,0)}{|\operatorname{Perp}_{U_2}(\bar{u}_3)|} = \frac{(1,\frac{-1}{2},\frac{1}{2},0,1)}{\sqrt{1+\frac{1}{4}+\frac{1}{4}+1}} = \frac{1}{\sqrt{10}}(2,-1,1,0,2)$$

$$W^{\perp}_{ON} = \left\{\begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \sqrt{2}\begin{bmatrix} 0 \\ 1 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \frac{1}{\sqrt{10}}\begin{bmatrix} 2 \\ -1 \\ 1 \\ 0 \\ 2 \end{bmatrix}\right\}$$

Pimp. Sols

$\dim(W) + \dim(W^{\perp})$
$= \dim(\mathbb{R}^5)$
$2 + 3 = 5$ Satisfecho