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a) $W = \begin{bmatrix} a & b \\ a+b & a \end{bmatrix} = a\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix} + b\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

base de $W \Rightarrow \left\{\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}\right\}$ com $\dim W = 2$

b) $\begin{bmatrix} a & b \\ c & d \end{bmatrix} = u\begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} + t\begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$

$$\begin{array}{l} u+2t=a \\ -u+t=b \\ 3t=c \\ u+4t=d \end{array} = \left[\begin{array}{cc|c} 1 & 2 & a \\ -1 & 1 & b \\ 0 & 3 & c \\ 1 & 4 & d \end{array}\right] \Rightarrow \left[\begin{array}{cc|c} 1 & 2 & a \\ 0 & 3 & a+b \\ 0 & 0 & a+b-c \\ 0 & 2 & d-a \end{array}\right]$$

$$\Rightarrow \left[\begin{array}{cc|c} 1 & 2 & a \\ 0 & 1 & (a+b)/3 \\ 0 & 0 & a+b-c \\ 0 & 0 & (d-a)-\frac{2}{3}(a+b) \end{array}\right]$$

$a+b=c$ ✓

$3d-3a-2a-2b=0$

$5a+2b=3d$ ✗

$\therefore \left\{\begin{bmatrix} a & b \\ c & d \end{bmatrix};\ a+b=c,\ 5a+2b=3d\right\}$ não é base de W.