

M293 F FA95 #2

$$30) (a) \left\{ \begin{bmatrix} 0 \\ -1 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \\ 1 \end{bmatrix} \right\}$$

$$(b) \quad 2$$

(c) Yes. Two dimensional object in \mathbb{R}^4

$$(d) \quad \text{We want } s \begin{bmatrix} 0 \\ -1 \\ 1 \\ 0 \end{bmatrix} + t \begin{bmatrix} 1 \\ -1 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} -s+t \\ -s-t \\ s+t \\ t \end{bmatrix} = \begin{bmatrix} x \\ y \\ z \\ u \end{bmatrix}$$

$$\text{ie } x=t, \quad y=-s-t, \quad z=s, \quad u=t, \quad s, t \text{ arbitrary}$$

Obviously: $x=u$

Eliminating s, t between the first 3 eqns, we have

$$x+y+z=0 \quad \text{ie } a=1, b=1, c=1, d=0.$$

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31) The answer is d).