

Week 2

MATH 4A

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3-2.2 Find the value of a for which $v = \begin{bmatrix} -10 \\ 9 \\ -6 \\ a \end{bmatrix}$ is in the span of the set

$$H = \text{span} \left\{ \begin{bmatrix} 5 \\ -2 \\ 3 \\ -3 \end{bmatrix}, \begin{bmatrix} 0 \\ -5 \\ 5 \\ 4 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 5 \\ 2 \end{bmatrix} \right\}.$$

3-2.3 Find a set of vectors $\{u, v\}$ in \mathbb{R}^4 that spans the solution set of

$$\begin{cases} w - x + y - 2z = 0, \\ 3w + 2x - y + z = 0. \end{cases}$$

3-2.7 Let $a_1 = \begin{bmatrix} 1 \\ 3 \\ 1 \end{bmatrix}$, $a_2 = \begin{bmatrix} h \\ -11 \\ -5 \end{bmatrix}$, and $a_3 = \begin{bmatrix} -10 \\ -14 \\ -5 \end{bmatrix}$

This set will span \mathbb{R}^3 , unless h is what?

3-2.9 $A = \begin{bmatrix} -3 & 9 & -9 \\ -4 & 14 & -14 \\ 1 & -1 & 1 \end{bmatrix}$. Is it true that $Ax = b$ has a solution for every b ?