Homework 3, Section 1.3: 1-11 odd, 17-25 odd

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Homework

1.

$u = \begin{bmatrix} -1 & 2 \end{bmatrix} v = \begin{bmatrix} -3 & -1 \end{bmatrix}$

3.

$u = \begin{bmatrix} -1 & 2 \end{bmatrix} v = \begin{bmatrix} -3 & -1 \end{bmatrix}$

5.

$3x_1 + 5x_2 = 2 \ -2x_1 + 0x_2 = -3 \ 8x_1 + -9x_2 = 8$

7.

$a = u - 2v \ b = 2u - 2v \ c = 2u - 2.5v \ d = 3u - 4v$

9.

$x_1 \begin{bmatrix} 0 & 4 & -1 \end{bmatrix} + x_2 \begin{bmatrix} 1 & 6 & 3 \end{bmatrix} + x_3 \begin{bmatrix} 5 & -1 & -8 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 \end{bmatrix}$

11.

The linear system corresponding to M has a solution so 1 has a solution and b is therefore a linear combination of a_1, a_2 and a_3.

17.

The weights are 1 and -1

19.

If v_1 and v_2 are nonzero vectors then $Span\{v_1, v_2\}$ for the given vectors is the set of points on a line through v_1 and 0.

21.

The matrix corresponds to a consistent system for all h and k, so y is in Span of $\{u, v\}$

23.

Span $\{u, v\} = $ span $\{u\}$

25. A)

There are only three vectors in the set of columns $\{a_1, a_2, a_3\}$ in A and b is not one of them.

25. B)

There are infinitely many vectors in $W = Span\{a_1, a_2, a_3\}$

25. C)

a_1 is in W.