MATH 54, FALL 2016, QUIZ 7

(1) Find all eigenvalues and corresponding eigenspaces of the matrix A.

$$A = \begin{bmatrix} -7 & -10 & -5 \\ 5 & 8 & 5 \\ 0 & 0 & -2 \end{bmatrix}$$

(2) Suppose V is a vector space and $\mathcal{B} = \{u_1, u_2, u_3\}, \mathcal{C} = \{v_1, v_2, v_3\}$ are two different bases for V. If $w = 3u_1 - u_2 + u_3$ and the change of basis matrix from $\mathcal{B}$ to $\mathcal{C}$, $\underset{\mathcal{C} \leftarrow \mathcal{B}}{P}$, is as given below, what is $[w]_{\mathcal{C}}$?

$$\underset{\mathcal{C} \leftarrow \mathcal{B}}{P} = \begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 0 \\ 3 & 1 & 1 \end{bmatrix}$$

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