

QUIZ 17

1. Let $\mathcal{B} = \left\{ \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 2 \\ 1 \end{bmatrix} \right\}$ be a basis for \mathbb{R}^3 . Suppose that $[x]_{\mathcal{B}} = \begin{bmatrix} 3 \\ -2 \\ 11 \end{bmatrix}$ and $y = \begin{bmatrix} -3 \\ 4 \\ -2 \end{bmatrix}$

a. (3 points) Find the vector x in the standard basis

b. (3 points) Compute $[y]_{\mathcal{B}}$

2. (4 points) Determine whether the polynomials $(2 + t^2)$, $(-t + 3t^3)$, $(1 - t)$, and $(t^2 + t^3)$ are linearly independent in \mathbb{P}_3 or not.