7:58 AM

Assessment 5
<b>Dusty Wilson</b>
Moth 220

No work = no credit

...there is no study in the world which brings into more harmonious action all the faculties of the mind than [mathematics], ... or, like this, seems to raise them, by successive steps of initiation, to higher and higher states of conscious intellectual being....

James Joseph Sylvester

Warm-ups (1 pt each): Note: Assume  $\vec{e}_1, \vec{e}_2 \in \mathbb{R}^2$   $\vec{e}_1 \vec{e}_1^T = \underbrace{\begin{array}{c} \bullet \\ \bullet \end{array}}$ 1814 - 1897 (English mathematician)  $\vec{e}_1 \vec{e}_1 \vec{e}_1 = \underbrace{\begin{array}{c} \bullet \\ \bullet \end{array}}$ 1.) (1 pt) The quote above is by Sylvester who was one of the inventers of linear algebra. Sylvester seems to think that math was the key to enlightenment. Do you agree? Why or why not. Answer using complete English sentences.

Math helps, but is not the key. It is holors

to think that one's field is the be-all, end-all.

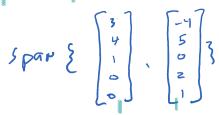
2.) (5 pts) Consider 
$$A = \begin{bmatrix} 1 & 0 & -3 & 1 & 2 \\ 0 & 1 & -4 & -3 & 1 \\ -3 & 2 & 1 & -8 & -6 \\ 2 & -3 & 6 & 7 & 9 \end{bmatrix}$$

$$\begin{bmatrix} 0 & -3 & 0 & 4 \\ 0 & 1 & -4 & 0 & -5 \\ 0 & 0 & 0 & 1 & -2 \\ 0 & 0 & 0 & 0 & 3 \end{bmatrix}$$

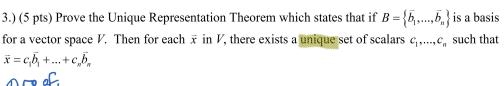
a.) Find a basis for Col A.

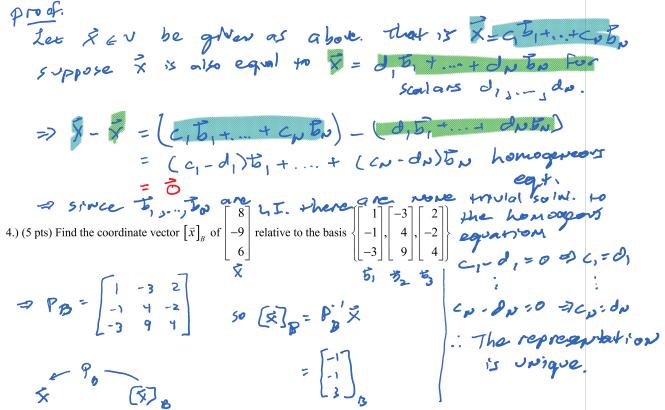


b.) Find Nul A 🝃



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5.) (5 pts) The set  $B = \{1-t^2, t-t^2, 2-2t+t^2\}$  is a basis for  $P_2$ . Find the coordinate vector of  $P_2(t) = 3 + t - 6t^2$  relative to  $P_2(t) = 3 + t - 6t^2$  relative to  $P_2(t) = 3 + t - 6t^2$  relative to  $P_2(t) = 3 + t - 6t^2$ 

$$P_{z} \longrightarrow \mathbb{R}^{3}$$

$$|-t^{2} \longrightarrow \begin{bmatrix} 0 \\ -1 \end{bmatrix}$$

$$|-t^{2} \longrightarrow \begin{bmatrix} 0 \\ -1 \end{bmatrix}$$

$$P_{D} = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & -2 \\ -2 & -1 & 1 \end{bmatrix} \text{ and } \vec{x} = \begin{bmatrix} 3 \\ 1 \\ -1 \end{bmatrix}$$

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