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| Assessment 5Dusty Wilson Math 220 No work = no credit | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *...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 1814 - 1897 (English mathematician) |

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| Warm-ups (1 pt each):  Note: Assume | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(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.

(5 pts) Consider .  
  
a.) Find a basis for .

b.) Find 

(5 pts) Prove the Unique Representation Theorem which states that if is a basis for a vector space *V*. Then for each  in *V*, there exists a unique set of scalars  such that 

(5 pts) Find the coordinate vector  of  relative to the basis 

(5 pts) The set is a basis for . Find the coordinate vector of  relative to *B.*