

Quiz 6 For DIS 201 March 10

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Problem 1: (4 points) Given the basis  $B = \left\{ \begin{bmatrix} 5 \\ 4 \end{bmatrix}, \begin{bmatrix} 6 \\ 5 \end{bmatrix} \right\}$

(1) Find the coordinate vector  $[x]_B$  for  $x = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$ .

(2) Find the vector  $x$ , with the coordinate vector  $[x]_B = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$ .

Problem 2: (3 points) Find the basis for Row space of  $A$ , and also what is the dimension

$$A = \begin{bmatrix} 2 & -1 & 1 & -6 & 8 \\ 1 & -2 & -4 & 3 & -2 \\ -7 & 8 & 10 & 3 & -10 \\ 4 & -5 & -7 & 0 & 4 \end{bmatrix}$$

Problem 3: Quick Questions (3 points)

1) If there exist  $\{v_1, \dots, v_p\}$  that span  $V$ , then  $\dim V \leq p$ . true or False.  
Justify your answer

2) If  $A_{\substack{6 \times 3 \\ 3 \times 6}}$  has rank 3, then what is  $\text{nul}(A^T)$

If  $A, B$  are row equivalent, then their row spaces are the same?  
(Hint: consider different row operations)