Quiz 5 Class 19

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NAME & ID(Please print legibly)

PLEASE SHOW ALL YOUR WORK.

1. Start with the matrix
$$\begin{pmatrix} 1 & -2 & 2 & 0 \\ 2 & -2 & 4 & 0 \\ 3 & -3 & 7 & 0 \end{pmatrix}.$$

   a. Find a basis for the column space $C(A)$.

   b. Find a basis for the nullspace $N(A)$.

   c. Find a basis for the row space $C(A^T)$.

   d. Write the complete solution to $Ax = b$.

$$A = \begin{pmatrix} 1 & -2 & 2 & 0 \\ 2 & -2 & 4 & 0 \\ 3 & -3 & 7 & 0 \end{pmatrix} \quad \text{and} \quad b = \begin{pmatrix} 1 \\ 2 \\ 4 \end{pmatrix}$$

2. Does there exist a matrix B whose column space is spanned by $(1, 2, 3), (1, 0, 1)$ and whose nullspace is spanned by $(1, 2, 3, 6)$. If so, construct B. If not, explain why not.