

Name \_\_\_\_\_ Quiz 4

For these problems define  $B_1 = \left\{ \begin{bmatrix} 1 \\ 5 \end{bmatrix}, \begin{bmatrix} 2 \\ 6 \end{bmatrix} \right\}$  and  $B_2 = \left\{ \begin{bmatrix} 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 1 \\ 3 \end{bmatrix} \right\}$ . A linear transformation  $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$  is given by  $T \left( \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}_S \right) = \begin{bmatrix} x_1 + x_2 \\ x_2 \end{bmatrix}_S$

1) Find an expression that gives  $[T]_S^S$

2) Find an expression that gives  $[T]_{B_1}^{B_2}$

3) A  $5 \times 7$  matrix has a null space of dimension 3. When it is row reduced, how many rows of zeroes will there be?