1. Let \( A = \begin{bmatrix} 1 & 24 & -13 & -12 \\ 1 & 3 & -2 & -1 \\ 7 & 0 & -3 & 4 \end{bmatrix} \). Find bases for \( \text{col}(A) \), \( \text{nul}(A) \), and \( \text{row}(A) \).

2. If \( A \) is \( 6 \times 11 \) of rank 4, what is the dimension of \( \text{nul}(A) \)?

3. If \( A \) is the matrix corresponding to a one-one linear transformation \( T : \mathbb{R}^4 \rightarrow \mathbb{R}^8 \), what is the dimension of \( \text{nul}(A) \)? of \( \text{row}(A) \)? of \( \text{nul}(A^T) \)?

4. Suppose that \( A \) is \( m \times n \) where \( A\mathbf{x} = \mathbf{b} \) is consistent for all \( \mathbf{b} \in \mathbb{R}^m \). How many solutions does \( A^T \mathbf{y} = 0 \) have?