

Name (Print): _____

Problem 1 Determine whether the following statements are True or False:

1. _____ If a square matrix A has two identical columns, then A is not invertible.
2. _____ If A is row equivalent to the identity matrix, then the equation $A\mathbf{x} = \mathbf{0}$ has only trivial solution.
3. _____ If a square matrix A is not invertible, then A has fewer than n pivot positions.
4. _____ If the equation $A\mathbf{x} = \mathbf{b}$ has no solution for some $\mathbf{b} \in \mathbb{R}^n$, then the columns of A^T are linear dependent.
5. _____ If D is a square $n \times n$ matrix, then the equation $D\mathbf{x} = \mathbf{b}$ has at least one solution for each $\mathbf{b} \in \mathbb{R}^n$.

Problem 2 Determine whether the following matrix is invertible or not. If it is invertible, find the inverse.

$$A = \begin{pmatrix} 1 & 0 & 3 \\ -1 & 3 & 2 \\ 0 & 2 & -3 \end{pmatrix}.$$

Find the inverse of A^T if it exists.