Math 54 Handout 5

June 25, 2018

Question 1.

Suppose A is a $m \times n$ matrix, and suppose there exist a $n \times m$ matrix C such that $CA = I_n$. Show that $Ax = 0$ has only the trivial solution.

Question 2.

Suppose A is a $m \times n$ matrix, and suppose there exist a $n \times m$ matrix D such that $AD = I_m$. Show that $Ax = b$ has a solution for all $b \in \mathbb{R}^m$.

Question 3.

Suppose A and B are both square matrices. Show that if AB is invertible, then so is A and B.

Question 4.

Let

$$A = \begin{pmatrix} 1 & 1 & 2 \\ 1 & 0 & 3 \\ 3 & 8 & 1 \end{pmatrix}$$

Is the matrix A invertible?

Question 5.

Let

$$A = \begin{pmatrix} 3 & 7 \\ 2 & 5 \end{pmatrix}$$

Find the inverse of A

Question 6.

True or False: Suppose A and B are both invertible, then $(A + B)^{-1} = A^{-1} + B^{-1}$