ISLAMIC UNIVERSITY OF TECHNOLOGY

Organization of Islamic Cooperation

Board Bazar, Gazipur

Inverses and  
Transposes

MATH 4341

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**Problem 1**

If a matrix has a row that is a linear combination of the other rows, it cannot have an inverse (determinant ).

a) From the system, we should get equations where equation equation equation , but the result does not agree with this. We get . Thus, there is no solution.

b) Column vectors of the form are acceptable.

c) Row becomes all s.

**Problem 2**

**Problem 3**

does not exist.

**Problem 4**

For , the second row becomes all s, making the matrix singular.

For , row and become the same.

For , column and column become the same.

For all these cases, we will get pivots during elimination.

**Problem 5**

For any and , if , there will be no change after the permutations or .

Since the transformation beings to , there can be no inverse for .

is singular.

**Problem 6**

**Problem 7**

**Problem 8**

Since is already upper triangular,

and

In ,

In ,

**Problem 9**

**Problem 10**

**Problem 11**

Since and , and .