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Mat 2580

Pg 115 # 13-23 odd

13) When is a square upper triangular matrix invertible?

A square upper triangular matrix is invertible if all entries on the matrix is diagonal are non-zeros.

15) Is it possible for a 4x4 matrix to be invertible when its columns do not span R^4 ?

No, the IMT'S Statement is then false, because a 4x4 matrix cannot be invertible when its columns do no span R^4.

17) Can a square matrix with two identical columns be invertible?

If A has two identical columns, then its columns are linearly dependent.

19) If the columns of a 7x7 matrix D are linearly dependent, what can be said about the solutions of Dx=B?

By the IMT'S statement, thus the equation Dx=b has a solution for each b in span of R_7.

21) If the equation C **u** = **v** has more than one solution for some **v** in R^n, can the columns of the n x m matrix C span R^n ?

The matrix C cannot be inventible (by theorem 5), so the statement of the IMT is false and the columns of C do not span R^n.

23) Assume that F is an n x m matrix. If the equation Fx = y is inconsistent for some y in R^n, what can you say about the equation Fx= 0?

Since the IMT statement is false thus the equation FX= 0 has a nontrivial solution.