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16 February 2023
Due Tuesday 21 February 2023

Linear Algebra, Math 2101-002
Homework set #6

1. For each of the following statements indicate if the statement is TRUE or FALSE.
If it is true, prove the statement. If it is false, give a counter-example.

(a) If A and B are nonsingular, then, $AB = BA$, i.e., they commute.

(b) If A and B are nonsingular, then, $(AB)^{-1} = B^{-1}A^{-1}$.

(c) If A is nonsingular, this implies that $-A$ is nonsingular.

(d) If A and B are nonsingular, then, $A + B$ is nonsingular.

(e) Let $A = LU$, where L is lower triangular with all diagonal entries equal to one. If U is nonsingular, then A is nonsingular.

(f) The inverse of a lower triangular matrix is upper triangular.

2.–5. Exercises from the book (pp. 155-156)
- 3.10.1
- 3.10.3
- 3.10.6

Optional, extra credit: - 3.10.7