University of Luxembourg
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Linear Algebra 1 for the B.I.C.S. programme, Homework 13 (graded), Version 19

Instructions: *Return your paper* together with the question sheet (as a file or printed) *at latest Monday January 15th to Binbin Xu's mailbox,* binbin.xu@uni.lu*, or by postal mail to* Dr. Binbin Xu, Mathematics Research Unit, Université du Luxembourg, Maison du Nombre, 6, Avenue de la Fonte, L-4364 Esch-sur-Alzette.

Exercise 42. Let $M := \begin{pmatrix} 0 & 7 & 6 & 7 \\ 4 & 7 & 5 & 6 \\ 8 & 3 & 4 & 5 \\ 4 & 6 & 1 & 0 \end{pmatrix}$ Is M invertible? If so, compute the adjoint matrix of M and the inverse M^{-1}. Check that $M \cdot M^{-1}$ is the identity matrix.

Exercise 43. Let M as in the above exercise, and let $N := M - \begin{pmatrix} 0 & 0 & x & 0 \\ 0 & x & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$.

Find all the values for $x \in \mathbb{R}$ such that N is **not** invertible.