Linear algebra I
Tutorial problems #6

1. Let A be the $n \times n$ matrix with entries $a_{ij} = i + j$. Show that $\det A = 0$, if $n \geq 3$.

2. A square matrix A is called lower triangular, if all the entries above its diagonal are zero, namely if $a_{ij} = 0$ whenever $i < j$. Show that the determinant of such a matrix is the product of its diagonal entries.

3. Suppose A is an invertible $n \times n$ matrix. Express $\det(\operatorname{adj} A)$ in terms of $\det A$.