Linear Algebra II - Worksheet 7

Exercise 1 : Compute the determinant of:

$$A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & 6 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 3 & 0 & 4 & 5 & 6 \\ 2 & 1 & 2 & 3 & 4 \\ 0 & 0 & 0 & 6 & 5 \\ 0 & 0 & 0 & 5 & 6 \end{bmatrix}.$$

Exercise 2 : Let M be a $n \times n$ matrix. For $\lambda \in \mathbb{R}$, compute $\det(\lambda M)$ as a function of λ and $\det M$.

Exercise 3 : Let M be a 2×2 invertible matrix. Compute $\det(M^{-1})$ as a function of $\det M$.

Exercise 4 : Find the sign of

$$\det \begin{bmatrix} 1 & 1000 & 2 & 3 & 4 \\ 5 & 6 & 7 & 1000 & 8 \\ 1000 & 9 & 8 & 7 & 6 \\ 5 & 4 & 3 & 2 & 1000 \\ 1 & 2 & 1000 & 3 & 4 \end{bmatrix}.$$