

Additional Problems Assignment 31

1. Let $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ be a general 2×2 matrix.
 - (a) Suppose B is formed from A by swapping the rows. Show $\det B = -\det A$.
 - (b) Suppose B is formed from A by multiplying one row by α and adding it to the other row. Show $\det B = \det A$.
2. Suppose A is an $n \times n$ upper triangular matrix with i, j -entry a_{ij} . Note that $a_{ij} = 0$ when $i > j$. Use induction to prove $\det A = a_{11}a_{22} \dots a_{nn}$. That is $\det(A)$ is the product of the diagonal elements. (Hint use the first column).
3. Prove $\det I_n = 1$ for all n .