

Properties of Determinants Part II

MATH 204: Linear Algebra

Prepare for class October 20, 2017

Name (Print): _____

After rereading Section 3.2, work through the following ideas.

1. [Yes, this is from Wednesday's group work!] Suppose $A = \begin{bmatrix} 2 & -1 \\ 5 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$.

(a) Find $\det(A)$, $\det(B)$, AB and $\det(AB)$.

(b) What conjecture might you make from your results?

2. [Yes, this is from Wednesday's group work!] Suppose $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$.

(a) Find $\det(A)$, $\det(B)$, $\det(A)+\det(B)$, $A+B$ and $\det(A+B)$.

(b) What warning might you give from your results?

3. On page 173 in the text, the author's define a matrix U . What special properties does U have?

4. State the fact on page 173 about the determinant of A in relation to U .
5. Theorem 4 generalizes a result we already knew about 2×2 matrices. State Theorem 4 here.
6. The comment after Theorem 4 highlights the fact that a consequence of Theorem 4 is that we now have thirteen items that are logically equivalent for the Invertible Matrix Theorem! Carefully work through Example 3 in the text (page 173), justifying each step with Theorems from this chapter or with the extended Invertible Matrix Theorem. Write each step down carefully. The paragraph before Example 3 should give you guidance.
7. State Theorem 5. Then prove that it is true for the 2×2 matrix case.
8. Write down any questions you have on the reading.