

### 1.7 Pop quiz on Lecture 7 material

1. Let  $A = \begin{pmatrix} 2 & 6 & 9 \\ 0 & 3 & 8 \\ 0 & 0 & -1 \end{pmatrix}$ . Find (with proof)  $\det(A)$ .

2. Let  $A = \begin{pmatrix} 1 & 2 & 1 \\ -1 & 1 & 1 \\ 0 & 1 & 3 \end{pmatrix}$ . Find (with proof)  $\det(A)$ .

3. Let  $n \in \mathbb{Z}_{>0}$  and let  $A \in M_{n \times n}(\mathbb{Q})$  and assume that  $A^{-1}$  exists. Prove that

$$\det(A)^{-1} = \frac{1}{\det(A)}.$$

4. Let  $A = \begin{pmatrix} 1 & 2 & 1 \\ -1 & 1 & 1 \\ 0 & 1 & 3 \end{pmatrix}$ . Find (with proof) the  $(2, 3)$  cofactor of  $A$ .

5. Let  $A = \begin{pmatrix} 1 & 2 & 1 \\ -1 & 1 & 1 \\ 0 & 1 & 3 \end{pmatrix}$ . Use cofactor expansion to find  $\det(A)$ .

6. Let  $A = \begin{pmatrix} 1 & -2 & 0 & 1 \\ 3 & 2 & 2 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & -4 & 2 & 4 \end{pmatrix}$ . Use cofactor expansion to find  $\det(A)$ .