

Math 1553 Worksheet §5.1

1. Compute the determinant of

$$A = \begin{pmatrix} 4 & 0 & 0 & 5 \\ 1 & 7 & 2 & -5 \\ 3 & 0 & 0 & 0 \\ 8 & 3 & 1 & 7 \end{pmatrix}$$

using cofactor expansions. Expand along the rows or columns that require the least amount of work.

2. Find the inverse of

$$A = \begin{pmatrix} 4 & 1 & 4 \\ 3 & 0 & 2 \\ 0 & 5 & 0 \end{pmatrix}$$

using the formula

$$A^{-1} = \frac{1}{\det A} \begin{pmatrix} C_{11} & C_{21} & C_{31} \\ C_{12} & C_{22} & C_{32} \\ C_{13} & C_{23} & C_{33} \end{pmatrix}$$

3. a) Using cofactor expansion, explain why $\det A = 0$ if A has a row or a column of zeros.
- b) Using cofactor expansion, explain why $\det A = 0$ if A has adjacent identical columns.