

Problems Day 33, R 3/21/2024
Topic 15: Inverse, determinant, transpose
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Problem 1. Let $A = \begin{bmatrix} 4 & 3 \\ 1 & 2 \end{bmatrix}$. Find A^{-1} both by the formula and by row reduction.

Problem 2. $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 0 & 2 \\ 1 & 1 & 3 \end{bmatrix}$

- (a) Compute $\det A$ by first simplifying A using row reduction.
- (b) What is $\text{Null}(A)$? (No computation necessary after Part (a).)
- (c) **Do this after problems 3,4.** Use row reduction to find A^{-1} .

Problem 3. Compute the determinant of each of the following.

(a) $A = \begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$

(b) $B = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & -2 \end{bmatrix}$

(c) $C = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 3 & 0 \end{bmatrix}$

Problem 4. Compute the determinant:

(a) $A = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}$.

(b) $B = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 5 & 6 \\ 0 & 0 & 7 \end{bmatrix}$.

(c) $C = \begin{bmatrix} 5 & 0 & 0 & 0 \\ 2 & 3 & 0 & 0 \\ 4 & 1 & -2 & 0 \\ 3 & 2 & 5 & 2 \end{bmatrix}$

Problem 5. Let $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$

- (a) Compute $\det A$.
- (b) Find $\text{Null}(A)$.
- (c) Use row reduction to find A^{-1}

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