

Determinants: An Overview- HW Problems

In Problems 1-4 evaluate the following determinants.

1.
$$\begin{vmatrix} 1 & 2 \\ -3 & 4 \end{vmatrix}$$

2.
$$\begin{vmatrix} 2 & 1 & 5 \\ 0 & 3 & 2 \\ 0 & 0 & 4 \end{vmatrix}$$

3.
$$\begin{vmatrix} 3 & -1 & 4 \\ 2 & -2 & 3 \\ 1 & -1 & 2 \end{vmatrix}$$

4.
$$\begin{vmatrix} 1 & 1 & 0 & 3 \\ 0 & 2 & 0 & 0 \\ 0 & 3 & -2 & 1 \\ 0 & 4 & 3 & 2 \end{vmatrix}$$

5. Which of the matrices in problems 1-4 are invertible?

6. Let $A = \begin{bmatrix} 2 & 1 & 3 \\ 1 & 4 & 1 \\ 1 & 3 & 2 \end{bmatrix}$

- Find $\det(A^{-1})$ without finding A^{-1} .
- Find $\det(A^t)$ from $\det(A)$.

7. Let A and B be 3×3 matrices with $\det(A) = 2$ and $\det(B) = -3$.

Find

a. $\det(AB)$

b. $\det(2B)$

c. $\det(AB^{-1})$

d. $\det(2AB)$