

King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math 002 - Term 142
Recitation (9.3)

Question 1: If $A = \begin{bmatrix} 2 & 1 & -1 & 3 \\ -2 & 0 & 2 & -5 \\ 0 & 3 & 6 & -9 \\ 0 & 1 & 8 & -6 \end{bmatrix}$, then find

I. The minor M_{23} and the cofactor C_{43}

II. $|A|$

Answer: (I): $M_{23} = -18$ $C_{43} = 6$

Answer: (II): $|A| = 18$

Question 2: If $\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ 2 & 3 & 4 \end{vmatrix} = 5$, find $\begin{vmatrix} 2 & 3 & 4 \\ x-4 & y-6 & z-8 \\ -2 & -2 & -2 \end{vmatrix}$

Answer: $\begin{vmatrix} 2 & 3 & 4 \\ x-4 & y-6 & z-8 \\ -2 & -2 & -2 \end{vmatrix} = 10$

Question 3: If A is 3×3 and B is 4×4 invertible matrices, such that $|A| = -2$ and $|B| = 3$, then find $2 \left| \frac{1}{2}A \right| - \frac{1}{9} |3B^2|$.

Answer: -81.5

Question 4: If $\begin{vmatrix} 0 & 1 & k \\ 1 & k-1 & 1 \\ 1 & 2 & 3 \end{vmatrix} = 0$ then $k =$

- A) 1 or 2
- B) -1 or -2
- C) -1
- D) -1 or 2
- E) 2

Answer: $k = 1, k = 2$