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Determinants Class 12th

Short Questions

Sol.7)

Since $-1 \le x < 0$: [x] = -1

Q.1) Order
$$3 \times 3$$
 find $|A^{-1}| = ?$
Sol.1) We have $|A^{-1}| = \left|\frac{1}{|A|} \cdot Adj A\right|$

$$= \frac{1}{|A|^3} \cdot |Adj A|$$

$$= \frac{1}{|A|^3} \cdot |A|^{3-1} = \frac{1}{|A|^3} \cdot |A|^2$$

$$\therefore |A^{-1}| = \frac{1}{|A|} \quad Ans.$$
Q.2) Order 3×3 ; $|A| = 3$ and $|2 AB| = 120$ find $|B'| = ?$
Sol.2) We have $|2AB| = 2^3 |AB|$

$$120 = 8 \times 3 \times |B|$$

$$5 = |B|$$
Since $|B'| = |B|$

$$\Rightarrow |B'| = 5 \quad Ans....$$
Q.3) Order 2×2 ; $Adj A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ and $Adj B = \begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix}$ find $Adj(AB) = ?$
Sol.3) We have $Adj (AB) = (Adj B) (Adj A)$

$$= \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 2 & -1 \\ 21 & 4 \end{bmatrix} = \begin{bmatrix} 8 & 7 \\ 21 & 17 \end{bmatrix} \quad Ans....$$
Q.4). Order 2×2 ; $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ find $A(Adj A)$ without finding $Adj A$.
Sol.4) We have, $A|Adj A| = |A| I$

$$= \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= (-2) \begin{bmatrix} 1 & 0 \\ 0 & -2 \end{bmatrix} \quad Ans....$$
Q.5). If $n = 3 \times 3$ find $|Adj(Adj A)| = |A| n$

$$= |Adj A|^2$$

$$= (|A|^{3-1})^2 = |A|^4$$

$$= (5)^4 = 625 \quad Ans.$$
Q.6) If $A = \begin{bmatrix} 1 & 2 \\ -1 & 4 \end{bmatrix}$ find $(BA)^{-1}$ and $B^{-1} \begin{bmatrix} 2 & 4 \\ 3 & 6 \end{bmatrix}$
Sol.6) We know $(BA)^{-1} = A^{-1} B^{-1}$

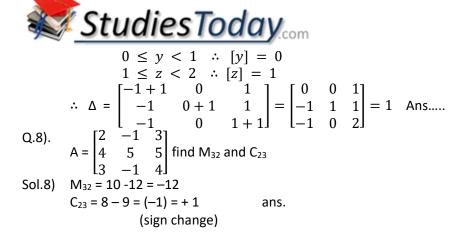
$$= |B| = 12 - 12 = 0 \quad \Rightarrow \quad B \text{ is non invertible}$$

$$\therefore (BA)^{-1} \text{ not possible}$$
Q7). If $-1 \le x < 0$; $0 \le y < 1$ and $1 \le z < 2$

$$= [x] \quad [y] \quad [z] \quad [y] \quad [z] \quad [x] \quad [y] \quad [z] \quad [x] \quad [y] \quad [z] + 1$$

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