

Matrix

Exercise 1.5 for Class IX

Q.1: Find the determinant of following matrices:

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

(ii). $B = \begin{bmatrix} 1 & 3 \\ 2 & -2 \end{bmatrix}$

(iii). $C = \begin{bmatrix} 3 & 2 \\ 3 & 2 \end{bmatrix}$

(iv). $D = \begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix}$

Q.2: Find which of the following matrices are singular or non-singular?

(i). $A = \begin{bmatrix} 3 & 6 \\ 2 & 4 \end{bmatrix}$

(ii). $B = \begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$

(iii). $C = \begin{bmatrix} 7 & -9 \\ 3 & 5 \end{bmatrix}$

(iv). $D = \begin{bmatrix} 5 & -10 \\ -2 & 4 \end{bmatrix}$

Q.3: Find the multiplicative inverse of following matrices (if exist):

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

(ii). $B = \begin{bmatrix} 1 & 2 \\ -3 & -5 \end{bmatrix}$

(iii). Same as above. Do yourself.

(iv). $D = \begin{bmatrix} 5 & -10 \\ -2 & 4 \end{bmatrix}$

Q.4: If $A = \begin{bmatrix} 1 & 2 \\ 4 & 6 \end{bmatrix}$ & $B = \begin{bmatrix} 3 & -1 \\ 2 & -2 \end{bmatrix}$ Then,

(i). $A(\text{Adj } A) = (\text{Adj } A)A = (\det A)I$

(ii). $BB^{-1} = I = B^{-1}B$

Q.5: Determine whether the given matrices are multiplicative inverses of each other

(i). $\begin{bmatrix} 3 & 5 \\ 4 & 7 \end{bmatrix}$ and $\begin{bmatrix} 7 & -5 \\ -4 & 3 \end{bmatrix}$

(ii). $\begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$ and $\begin{bmatrix} -3 & 2 \\ 2 & -1 \end{bmatrix}$

Q.6: If $A = \begin{bmatrix} 4 & 0 \\ -1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} -4 & -2 \\ 1 & -1 \end{bmatrix}$ and $D = \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix}$ Verify that:

(i). $(AB)^{-1} = B^{-1}A^{-1}$

(ii). $(AD)^{-1} = A^{-1}D^{-1}$