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Adjoint of a Matrix

Example Problems on How to Find the Adjoint of a Matrix

Example 1: If $A^T = -A$ then the elements on the diagonal of the matrix are equal to

- (a) 1 (b) -1 (c) 0 (d) none of these

Solution:

(c) $A^T = -A$; A is skew-symmetric matrix; diagonal elements of A are zeros.

so option (c) is the answer.

Example 2: If A and B are two skew-symmetric matrices of order n, then,

- (a) AB is a skew-symmetric matrix (b) AB is a symmetric matrix
(c) AB is a symmetric matrix if A and B commute (d)None of these

Solution:

(c) We are given $A' = -A$ and $B' = -B$;

Now, $(AB)' = B'A' = (-B)(-A) = BA = AB$, if A and B commute.

Example 3: Let A and B be two matrices such that $AB' + BA' = 0$. If A is skew symmetric ,then BA

- (a) Symmetric (b) Skew symmetric (c) Invertible (d) None of these

Solution:

(c) we have, $(BA)' = A'B' = -AB'$ [A is skew symmetric]; $= BA' = B(-A)$

$= -BA$

BA is skew symmetric.