Statement 1 : Determinant of a skew- symmetric matrix of odd order is zero.
Statement 2 : For any matrix A , $\det(A^T) = \det(A)$ & $\det(-A) = -\det(A)$.
where $\det(B)$ denotes determinant of matrix B . Then

Solution:

Let A is a skew-symmetric matrix $\Rightarrow A^T = -A \cdots (i)$

Taking determinant of (i), we get

$$|A^T| = |-A| \Rightarrow |A| = (-1)|A| \quad (\because |A| = |A^T|)$$

$\Rightarrow |A| = (-1)^n|A|$ where n is order of matrix

Since $n = 3$ is odd

$$\Rightarrow |A| = -|A| \Rightarrow 2|A| = 0$$

Therefore, statement 1 is true.

Hence, option 'C' is correct.

Statement 2 is incorrect $\det(A) = -\big(\det(A)\big)$ for odd order matrix only

A. Both statement are true

B. Both statement are false

C. Statement 1 is true, statement 2 is false

D. Statement 2 is true, statement 1 is false

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