If A is a square matrix, then adj A^T – (adj A)^T is equal to

(a) 2|A|

(b) 2|A| I

(c) null matrix

(d) unit matrix

Solution:

We know A^{-1} = adj A/det A

$(A^T)^{-1}$ = adj A^T/det A^T

=> adj A^T = det A^T.$(A^T)^{-1}$

=> adj A^T = det A.$(A^{-1})^T$ (since det A^T = det A, and $(A^T)^{-1} = (A^{-1})^T$

=> adj A^T = det A.(adj A/det A)^T

=> adj A^T = (det A/det A)(adj A)^T

=> adj A^T = (adj A)^T

=> adj A^T – (adj A)^T = 0

=> null matrix

Hence option c is the answer.