Let M & N be two $2n \times 2n$ non singular, skew symmetric matrices such that $MN = NM$. If P^T denotes the transpose of P, then $M^2 N^2 (M^T N)^{-1} (MN^{-1})^T$ is equal to:

Solution:

$$M^T = -M \qquad N^T = -N \qquad MN = NM$$

$$M^2 N^2 (M^T N)^{-1} (MN^{-1})^T$$

$$= M^2 N^2 N^{-1} (M^T)^{-1} (N^{-1})^T M^T$$

$$= -M^2 N^2 N^{-1} M^{-1} N^{-1} M$$

$$= -M^2 N M^{-1} N^{-1} M$$

$$= -MNN^{-1}M$$

$$= -M^2$$

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

$$(AB)^T = B^T A^T$$

$$(A^{-1})^T = (A^T)^{-1}$$

A M^2

B $-N^2$

C $-M^2$

D MN