

## Step-1

Suppose that  $CD = -DC$  then taking determinant gives

$$(\det C)(\det D) = -(\det D)(\det C)$$

Which is wrong.

The correct one is

$$(\det C)(\det D) = (-1)^n (\det D)(\det C)$$

## Step-2

For n even the reasoning fails because  $((-1)^n = +1)$

Where C, D are  $n \times n$  matrices.

Hence the given conclusion is wrong.