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**John R Greene\*** (jgreene@d.umn.edu), Department of Mathematics and Statistics, 1117  
University Drive, University of Minnesota Duluth, Duluth, MN 55812. *Traces of matrix products.*

Given two noncommuting matrices,  $A$  and  $B$ , it is well known that  $AB$  and  $BA$  have the same trace. This extends to cyclic permutations of products of  $A$ 's and  $B$ 's. We show here that for  $2 \times 2$  matrices  $A$  and  $B$ , whose elements are independent random variables with standard normal distributions, the probability that  $Tr(ABAB) > Tr(A^2B^2)$  is exactly  $\frac{1}{\sqrt{2}}$ . For  $n \times n$  matrices, we give tables from computations suggesting that the probability that  $Tr(ABAB) > Tr(A^2B^2)$  is still roughly .7, though we do not know the exact value when  $n > 2$ . (Received September 25, 2012)