1046-15-1404   **John R. Greene*** (`jgreene@d.umn.edu`), Department of Mathematics and Statistics, University of Minnesota Duluth, Duluth, MN 55812. *Traces of matrix products.* Preliminary report.

Given two noncommuting 2x2 matrices A and B, what can be said about traces of products of these two matrices? It is well known that AB and BA have the same trace. This easily generalizes to cyclic permutations. For example, AABB, BAAB, BBAA and ABBA all have the same trace. However, AABB and ABAB usually have different traces. We show that there is another symmetry: reversal. That is, AABBAB and BABBAA have the same trace even though they are not cyclic permutations of each other. We also address problems of the following type: Which is usually larger, tr(ABAB) or tr(AABB)? (Received September 15, 2008)