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ON THE SUM OF POWERS OF SQUARE MATRICES

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Abstract. Given a 2×2 matrix A, we obtain the formula for sum of A^n, $(n\in\mathbb{Z})$, using its trace and determinant only; this includes the negative powers in the case of a nonsingular matrix too. Here we mean by sum, the sum of all the entries of the matrix. Various special cases arising out of values of trace and determinant are discussed and as an application we also derive Marcus-Newman inequality proved by D. London. $2\,\mathrm{su}(A^3)\geqslant \mathrm{su}(A)\,\mathrm{su}(A^2)$, for all $A\in\mathscr{F}_2\cap\mathscr{M}_2^+$.

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