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Pinkus, A.

Some extremal problems for strictly totally positive matrices.

Linear Algebra Appl. 64, 141-156 (1985).

For Hilbert space operators it is well known that the sequences of approximation numbers, Gelfand numbers and Bernstein numbers coincide. In the case of finite dimensional real ℓ_p -spaces ($1 \leq p \leq \infty$) the author proves the same property for strictly totally positive matrices. He also shows that the sequences in question are strictly decreasing and identifies the extremal subspaces. The results are obtained more generally for rectangular matrices. The proof depends on studying partial derivatives of the function $F(x) = \|Ax\|_p / \|x\|_p$ and sign changes in the vector x .

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