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Monotonicity of the maximum of inner product norms

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Abstract: Let \mathbb{K} be the field of real or complex numbers. In this note we characterize all inner product norms p_1, \dots, p_m on \mathbb{K}^n for which the norm $x \mapsto \max\{p_1(x), \dots, p_m(x)\}$ on \mathbb{K}^n is monotonic.

Keywords: finite dimensional vector space, monotonic norm, absolute norm, inner product norm

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