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Math 121B: Quiz 6

(5) **1.** Let A be an $n \times n$ matrix with complex entries. Prove that if the rows of A form an orthonormal basis for \mathbb{C}^n , then $AA^* = I_n$

(5) **2.** Let $g : \mathbb{R}^4 \rightarrow \mathbb{R}$ given by

$$g(x_1, x_2, x_3, x_4) = 3x_1 - x_2 + 4x_3 + 7x_4$$

and consider \mathbb{R}^4 with the standard inner product. Is g in the dual of \mathbb{R}^4 ? If it is find a vector y such that $g(x) = \langle x, y \rangle$ for all $x \in \mathbb{R}^4$.