

MATHEMATICAL MONTHLY PROBLEM

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ABSTRACT. [11422] Let $H = H^T$ be an n -by- n real symmetric matrix with distinct eigenvalues and let A be an $n \times n$ real matrix. For $i \in \mathbb{N}$, define matrices $H_{i+1} = [A, H_i] = AH_i - H_iA$ in which $H_0 = H$. Prove that if H_1 and H_2 are symmetric then A is a normal matrix (that is, $AA^T = A^T A$).

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