

Challenge Question 2

MATH 1850 - Linear Algebra for Engineers

17 May 2024

Recall that a matrix A is called **symmetric** if $A = A^\top$. Similarly, a matrix A is called **skew-symmetric** if $A = -A^\top$. Prove that every square matrix A can be expressed as the sum of a symmetric matrix and a skew-symmetric matrix. (Hint: You may use the identity $A = \frac{1}{2}(A + A^\top) + \frac{1}{2}(A - A^\top)$, but you need to prove it first!).