

Does there exist a real  $3 \times 3$  matrix  $A$  such that  $\text{tr}(A) = 0$  and  $A^2 + A^t = I$ ?  
( $\text{tr}(A)$  denotes the trace of  $A$ ,  $A^t$  is the transpose of  $A$ , and  $I$  is the identity matrix.)