Mizzou AMS Student Chapter

Problem of the Week

Week 6

A ***tridiagonal*** matrix is a square matrix in which nonzero entries are only allowed to appear on the diagonal, the subdiagonal (i.e., entries of the form $A_{i+1,i}$) or the superdiagonal (i.e., entries of the form $A_{i,i+1}$).

Let A be a real symmetric $n \times n$ tridiagonal matrix with nonzero subdiagonal and superdiagonal entries. Prove that

(i) rank$A \geq n - 1$; and

(ii) A has n distinct eigenvalues.

Due by noon on March 3.