Math 54, Quiz 8 Section 6 GSI Carter

Name:

1. Let A be an $n \times n$ matrix with eigenvalue λ. For each of the following statements, write the word "true" or "false."

   (a) The matrix $2A$ has eigenvalue 2λ.

   (b) The matrix $A + 2I$ has eigenvalue $\lambda + 2$.

2. Give an orthogonal matrix Q and a diagonal matrix Λ such that $A = Q\Lambda Q^{-1}$.

$$A = \begin{pmatrix} 4 & 1 & 1 \\ 1 & 4 & 1 \\ 1 & 1 & 4 \end{pmatrix}$$