ST 705 Linear models and variance components
Lab practice problem set 2

January 19, 2022

1. Let
$$A = \begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}.$$

   Is A diagonalizable? If so, find the eigenvalues and eigenvectors of A.

2. Let A be a positive definite matrix, and show that
$$\mathrm{tr}(I - A^{-1}) \leq \log \det(A) \leq \mathrm{tr}(A - I).$$