

a. Using the Jacobi method with a tolerance of  $\epsilon = 10^{-6}$ ,

the eigenvalues of matrix A are: [-0.4213113 5.30785756 -0.13654627]

The corresponding eigenvectors are:

[-0.77264198 -0.59020967 0.23383097]

[ 0.13876148 -0.51643129 -0.84501123]

[ 0.61949143 -0.62044441 0.48091486]

b. The matrix A is reduced to a tridiagonal matrix B using the Householder method.

The resulting tridiagonal matrix B is:

[ 1.59 -2.71901 -0. ]

[-2.71901 3.31634 0.12811]

[-0. 0.12811 -0.15634]

c. The eigenvalues of the tridiagonal matrix B obtained in (2b),

using the QR method, are: [ 5.3078582 -0.42131367 -0.13654454]