1. Householder's method produces the following tridiagonal matrices.

(a) $\begin{bmatrix} 12.00000 & -10.77033 & 0.0 \\ -10.77033 & 3.862069 & 5.344828 \\ 0.0 & 5.344828 & 7.137931 \end{bmatrix}$

(b) $\begin{bmatrix} 2.0000000 & 1.414214 & 0.0 \\ 1.414214 & 1.000000 & 0.0 \\ 0.0 & 0.0 & 3.0 \end{bmatrix}$

(c) $\begin{bmatrix} 1.0000000 & -1.414214 & 0.0 \\ -1.414214 & 1.000000 & 0.0 \\ 0.0 & 0.0 & 1.000000 \end{bmatrix}$

(d) $\begin{bmatrix} 4.750000 & -2.263846 & 0.0 \\ -2.263846 & 4.475610 & -1.219512 \\ 0.0 & -1.219512 & 5.024390 \end{bmatrix}$

2. Householder's method produces the following tridiagonal matrices.

(a) $\begin{bmatrix} 4.0000000 & 1.4142136 & 0 & 0 \\ 1.4142136 & 4.0000000 & 1.4142136 & 0 \\ 0 & 1.4142136 & 4.0000000 & 0.0 \\ 0 & 0 & 0.0 & 4.0000000 \end{bmatrix}$

(b) $\begin{bmatrix} 5.0000000 & 2.5495098 & 0 & 0 \\ 2.5495098 & 6.38461538 & 2.1407569 & 0 \\ 0 & 2.1407569 & 4.2700005 & 0.6912809 \\ 0 & 0 & 0.6912809 & 4.345384 \end{bmatrix}$

(c) $\begin{bmatrix} 8.0000000 & -2.3048861 & 0 & 0 & 0 \\ -2.3048861 & 5.9294118 & 1.5022590 & 0 & 0 \\ 0 & 1.5022590 & 1.7714975 & -4.8901511 & 0 \\ 0 & 0 & -4.8901511 & -0.4361218 & -1.0898884 \\ 0 & 0 & 0 & -1.0898884 & 4.7352125 \end{bmatrix}$

(d) $\begin{bmatrix} 2.0000000 & 1.4142136 & 0 & 0 & 0 \\ 1.4142136 & 3.5000000 & 0.8660254 & 0 & 0 \\ 0 & 0.8660254 & 7.8333333 & 4.7140452 & 0 \\ 0 & 0 & 4.7140452 & 6.6666667 & 1.7320508 \\ 0 & 0 & 0 & 1.7320508 & 6.0000000 \end{bmatrix}$

3. Householder's method produces the following tridiagonal matrices.

(a) $\begin{bmatrix} 2.0000000 & 2.8284271 & 1.4142136 \\ -2.8284271 & 1.0000000 & 2.0000000 \\ 0.0000000 & 2.0000000 & 3.0000000 \end{bmatrix}$

(b) $\begin{bmatrix} -1.0000000 & -3.0655513 & 0.0000000 \\ -3.6055513 & -0.23076923 & 3.1538462 \\ 0.0000000 & 0.15384615 & 2.2307692 \end{bmatrix}$

(c) $\begin{bmatrix} 5.0000000 & 4.9497475 & -1.4320780 & -1.5649769 \\ -1.4142136 & -2.0000000 & -2.4855515 & 1.8226448 \\ 0.0000000 & -5.4313902 & -1.4237288 & -2.6486542 \\ 0.0000000 & 0.0000000 & 1.5939865 & 5.4237288 \end{bmatrix}$

(d) $\begin{bmatrix} 4.0000000 & 1.7320508 & 0.0000000 & 0.0000000 \\ 1.7320508 & 2.3333333 & 0.23570226 & 0.40824829 \\ 0.0000000 & -0.47140452 & 4.6666667 & -0.57735027 \\ 0.0000000 & 0.0000000 & 0.0000000 & 5.0000000 \end{bmatrix}$