

1. Find the eigenvalues and eigenvectors of the following matrices.

\*a.  $\begin{bmatrix} 1 & 5 \\ 2 & 4 \end{bmatrix}$

✓b.  $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

✓c.  $\begin{bmatrix} 10 & -6 \\ 18 & -11 \end{bmatrix}$

k.  $\begin{bmatrix} 1 & -2 & 2 \\ -1 & 0 & -1 \\ 0 & 2 & -1 \end{bmatrix}$

d.  $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

l.  $\begin{bmatrix} 3 & 1 & 0 \\ 0 & 1 & 2 \\ 0 & 1 & 2 \end{bmatrix}$

e.  $\begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$

\*f.  $\begin{bmatrix} 1 & 1 \\ -1 & 3 \end{bmatrix}$

✓m.  $\begin{bmatrix} 1 & -1 & 4 \\ 3 & 2 & -1 \\ 2 & 1 & -1 \end{bmatrix}$

\*g.  $\begin{bmatrix} -1 & 1 & 2 \\ 1 & 2 & 1 \\ 2 & 1 & -1 \end{bmatrix}$

\*n.  $\begin{bmatrix} 1 & -6 & 4 \\ -2 & -4 & 5 \\ -2 & -6 & 7 \end{bmatrix}$

✓h.  $\begin{bmatrix} 1 & 0 & 0 \\ -2 & 1 & 2 \\ -2 & 0 & 3 \end{bmatrix}$

o.  $\begin{bmatrix} 3 & 2 & -2 \\ 2 & 2 & -1 \\ 2 & 1 & 0 \end{bmatrix}$

i.  $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 1 & 0 \\ 0 & -2 & 3 \end{bmatrix}$

2 ✓ p.  $\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 2 \end{bmatrix}$

\*j.  $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}$

(The material is from Characteristic Polynomial. Please show each step of your solution to the parts (h) and (p).)

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