

02

AUGUST
WEDNESDAY

2017

WK 31 • 274

04) Find Eigen values and Eigenvectors.

a) $C = \begin{pmatrix} 7 & 3 \\ 3 & -1 \end{pmatrix}$

$C - \lambda I = 0$

$\begin{pmatrix} 7-\lambda & 3 \\ 3 & -1-\lambda \end{pmatrix}$

characteristic poly

$$\lambda^2 - 6\lambda - 10 = 0$$
$$(\lambda - 8)(\lambda + 2)$$

$\lambda_1 = 8 \text{ and } \lambda_2 = -2 \quad \text{Eigen values}$

Eigen vectors

$V_1 = (3, 1)$

$V_2 = (-1, 3)$

b) $B = \begin{pmatrix} 4 & \sqrt{3} \\ \sqrt{3} & 2 \end{pmatrix}$

characteristic poly.

$$\lambda^2 - 6\lambda + 5 = 0$$
$$(\lambda - 5)(\lambda - 1) = 0$$

$\lambda_1 = 5, \lambda_2 = 1 \quad \text{Eigen values}$

$V_1 = (\sqrt{3}, 1) \quad \text{Eigen vector}$

$V_2 = \left(-\frac{1}{\sqrt{3}}, 1\right) \quad \text{Eigen vector}$

2017 AUGUST

Mon	7	14	21	28	
Tue	1	8	15	22	29
Wed	2	9	16	23	30
Thurs	3	10	17	24	31
Fri	4	11	18	25	
Sat	5	12	19	26	
Sun	6	13	20	27	

Notes

c) $A = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}$

characteristic polynomial $\lambda^2 - 1 = 0$

$$(A - I)(\lambda + 1) = 0$$

$\lambda_1 = -1, \lambda_2 = 1$ Eigen values

$v_1 = (1 - \sqrt{2}, 1)$ Eigen
Vectors

$v_2 = (1 + \sqrt{2}, 1)$

2017 SEPTEMBER

Mon	4	11	18	25	
Tue	5	12	19	26	
Wed	6	13	20	27	
Thu	7	14	21	28	
Fri	1	8	15	22	29
Sat	2	9	16	23	30
Sun	3	10	17	24	