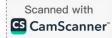
	Date:
Step I Find the Eigenvalues C?	L)
der (A-21) = 0	
Where I is the identity matrix	
A=>1=4-2 8 -1	
$A = \lambda 1 = \begin{bmatrix} 4 - \lambda & 8 & -1 \\ -2 & -9 - \lambda & -2 \end{bmatrix}$	
0 10 5-2	
det (A-21) = 4-2 8	-1
-2 -9-2	-2
0 10 5	5-2
be expand a long the first row; det (A-21) = (4-2) -9-2-2	
det(A-21) - (4-21/-9-2-2	-8 2-2 1
10 5-A	05-2
1-111-2 -9	-2 \
10 1	0



Date:	
Compute each minor determinant;	
Expanding	
I first minor:	
Tipiest, minor.	
[-9-λ -2] = (-9-λ) (5-λ)-(-2)(10)=	
$\begin{vmatrix} -9 - \lambda & -2 \\ -9 - \lambda & -2 \end{vmatrix} = (-9 - \lambda)(5 - \lambda) - (-2)(10) = (-9 - \lambda)(5 - \lambda) + 20.$	
$(-9-\lambda)(5-\lambda)+20$	- 20
Expanding:	
1	
$\frac{(-1-2)(5-1)}{(5-1)} = -45+91-51+11=11$	
-26.	
So: -9-2 -2 10 5-2 = x2 + 42 - 45 + 20 = x + 42 - 25.	
J8! 1 1 1 2 1 C 1 2 2 2	
10 3-71=1 +42-43 +20=1+42	
<u> </u>	
Second minor;	
221	
$\frac{-2}{0} \frac{-2}{52} = (-2)(5-2)-(-2)(0) = -10 + 22.$	THE STREET
05%	





Se Third Minor;		Date:	
$\begin{vmatrix} 1-2-9-2 \\ 0 \end{vmatrix} = (-2)$ Substitute back			
	100		

Scanned with

CS CamScanner

The state of th

Substitute, back into determinant. det (A-21)=(A-2)(X+42-25)-8(40+22) Simplify each term. 1, Expand (4-2) (x2+42-25) (4-x)(x2+4x-25)=42+162-100-23 +252 = -23+412 52. Simplify -8 (-10+2) $-8(-10+2\lambda)=80-1$ ambine all Ferms 1 (A-21)=x3+412-100+80-162+00 det (A-21) = - 2 + 252

Scanned with

CS CamScanner

5	Date:
D	factorize
9	$det(A-21) = -\lambda(2^{2}-25)$.
3	der (A-71) = (7-5) (7+5)
1	Eigenvalues;
3	$\lambda_{1}=0, \chi_{2}=5, \lambda_{3}=-5.$
3	
3	Steps find the Eigenvectors.
	For 2=5-, [-18 -11
3	$A-51 = \begin{bmatrix} -2 & -14 & -2 \end{bmatrix}$
3	LU 10 0 7



Eigen Vectors

Formula:
$$(A - \lambda I)V = 0$$
, where $V = \begin{pmatrix} \chi \\ \chi \end{pmatrix}$

$$= \begin{cases} \sqrt{2} & \text{for } \lambda_{2} = 5 \\ -2 & -9 & -2 \\ 0 & 10 & 5 \end{cases} - 5 \begin{pmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{bmatrix} 2 \\ 4 \\ 2 \end{bmatrix} = 0$$

$$= > \begin{pmatrix} -1 & 8 & -1 \\ -2 & -14 & -2 \\ 0 & 10 & 0 \end{pmatrix} \begin{pmatrix} 2 \\ 7 \\ 2 \end{pmatrix} = 0$$

$$\Rightarrow \begin{cases} -x + 8y - z = 0 \\ -2x - 14y - 2z = 0 \end{cases} \Rightarrow \begin{cases} y = 0 \\ x = -z \end{cases}$$

As let take
$$x=-2$$
, the equation holds for any
Non-zero z and z ,
$$V_{2} = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$$

$$\frac{\sqrt{3}}{\sqrt{5}} \sqrt{5} \sqrt{3} = -5$$

$$= \sqrt{\frac{4}{2}} \sqrt{\frac{8}{2}} - \frac{1}{2} + 5 \left(\frac{1}{2} + \frac{$$

$$= \begin{cases} 9x + 8y - 7 = 0 \\ -2x - 4y - 27 = 0 \end{cases}$$

$$= \begin{cases} -2x + 27 = 0 \\ 7 = 7 \end{cases}$$

$$= \begin{cases} 1 \\ -1 \end{cases}$$

$$= \begin{cases} 1 \\ -1 \end{cases}$$
Scanned with CamScanner tet's assign $2 = 1$

vectors in to form: Importance of Zigin Eigen values: 2=5, 23=-5

their Magnitudes (=) /21 = 5 $|\lambda_3| = 5$

Sum = 5+5=10

Importance of $\lambda_2 = \frac{|\lambda_2|}{|\lambda_2|} \times 100\% = 100\%$

=> 5 ×100% = 502

Importance of 73 = 50 x 100% = 50%

Final Answers 2x=5, $2x=\left(\begin{array}{c}1\\0\\-1\end{array}\right)$, Importance = $50\frac{2}{5}$

 $\chi_3 = -5, \ \chi_3 = \begin{pmatrix} 1 \\ -1 \end{pmatrix}, importance = \frac{50\%}{6}$