

Pago No Dato 1 1

The augmented matrix.

$$\begin{bmatrix} -1 & 3 & 4 & 30 \\ 3 & 2 & -1 & 9 \\ 2 & -1 & 2 & 10 \end{bmatrix}$$

$$\begin{bmatrix} 1 & -3 & -4 & -30 \\ 3 & 2 & -1 & 9 \\ 2 & -1 & 2 & 10 \end{bmatrix}$$

1.

R, (-1)

$$\begin{bmatrix} 1 & -3 & -4 & | & -30 & | & R_2 & (\frac{1}{11}) \\ 0 & 11 & 11 & | & 97 & | & R_2 & (\frac{1}{11}) \\ 0 & 5 & 10 & 70 & | & & & & \\ \end{bmatrix}$$

$$\begin{bmatrix} 1 & -3 & -4 & | & -30 \\ 0 & 1 & 1 & 9 & R_{23}(-5) \\ 0 & 5 & 10 & 70 \end{bmatrix}$$

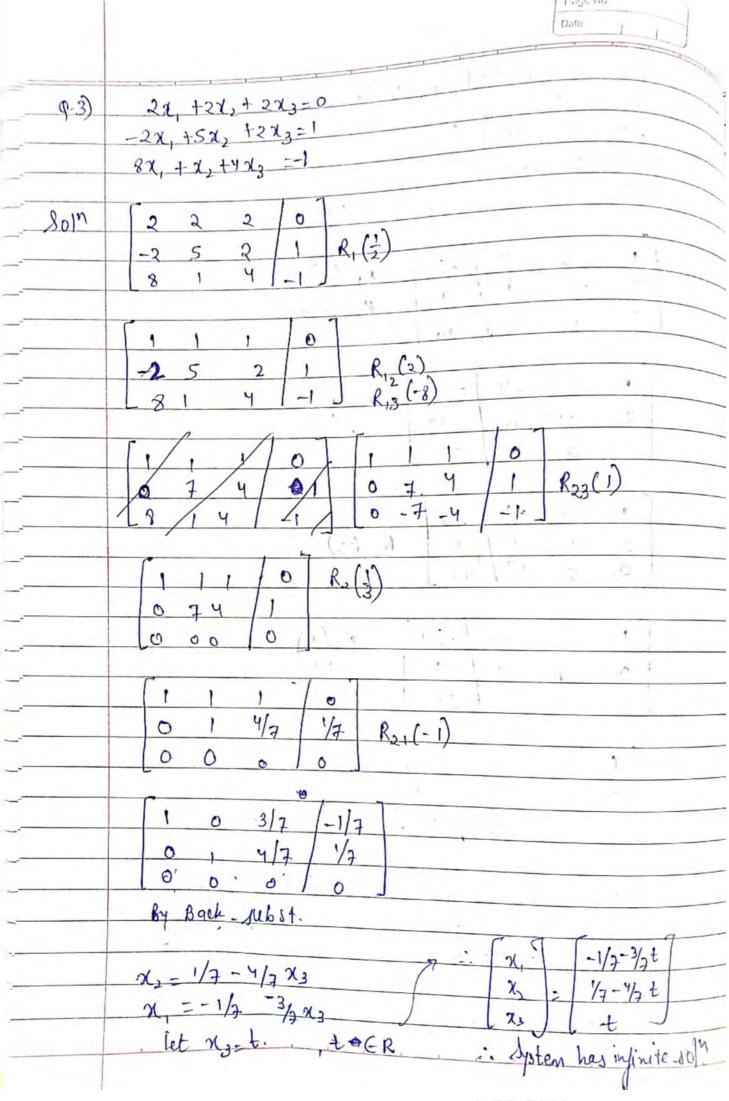
1	1	-3	-4	-30	Rollin
1	0		1	9	(3)
	0	0	5	25	

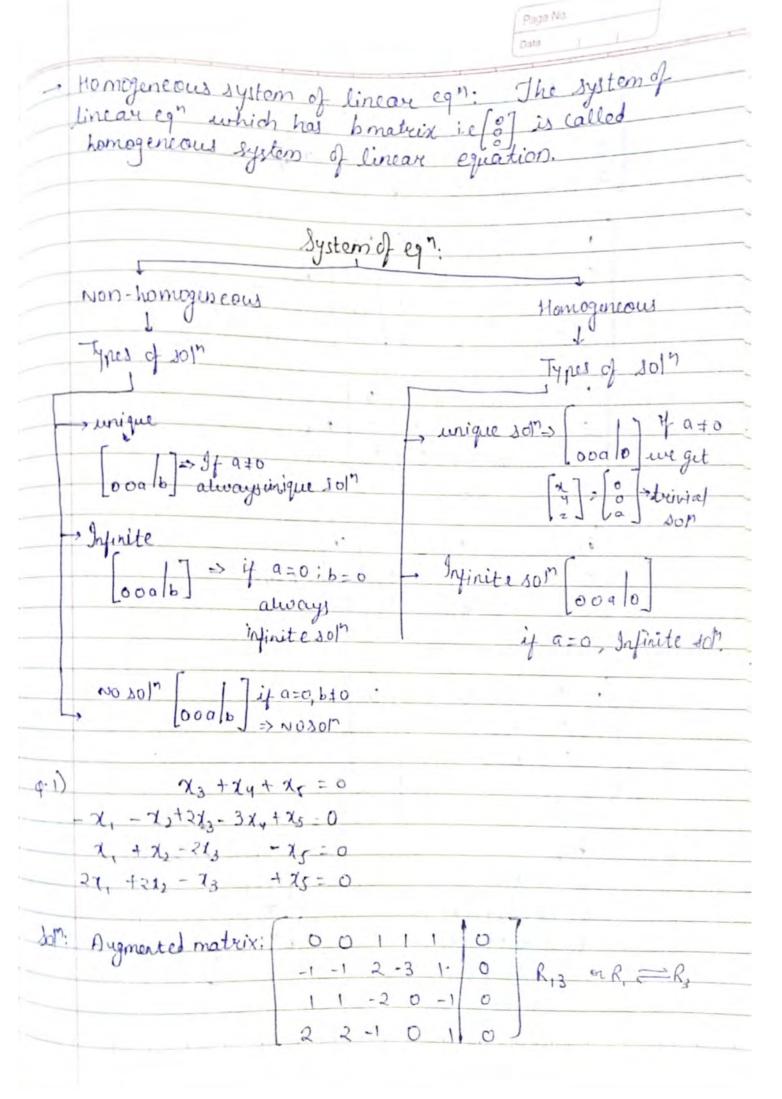
r	-3	-4	1-307
0		1	9
0	0	81	5]

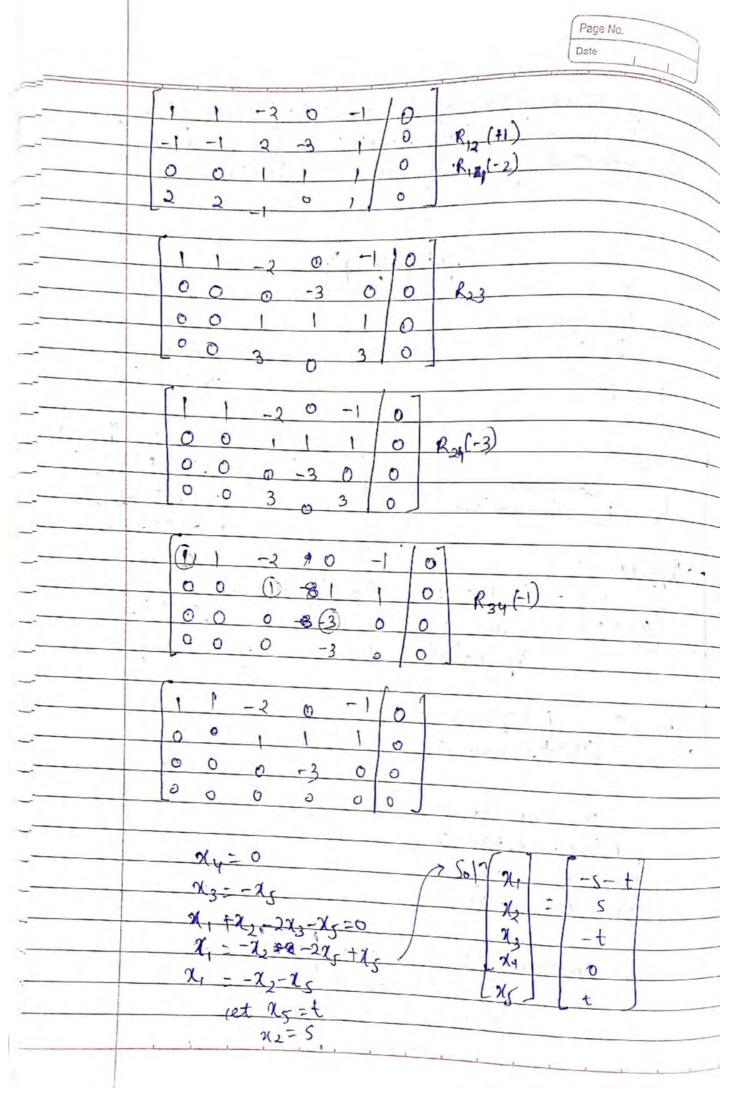
Back - sub.

$$z = 5 \Rightarrow z = 1/5$$

 $y = 4 \Rightarrow 7 = 1/4$
 $x = -30 + 20 + 12$

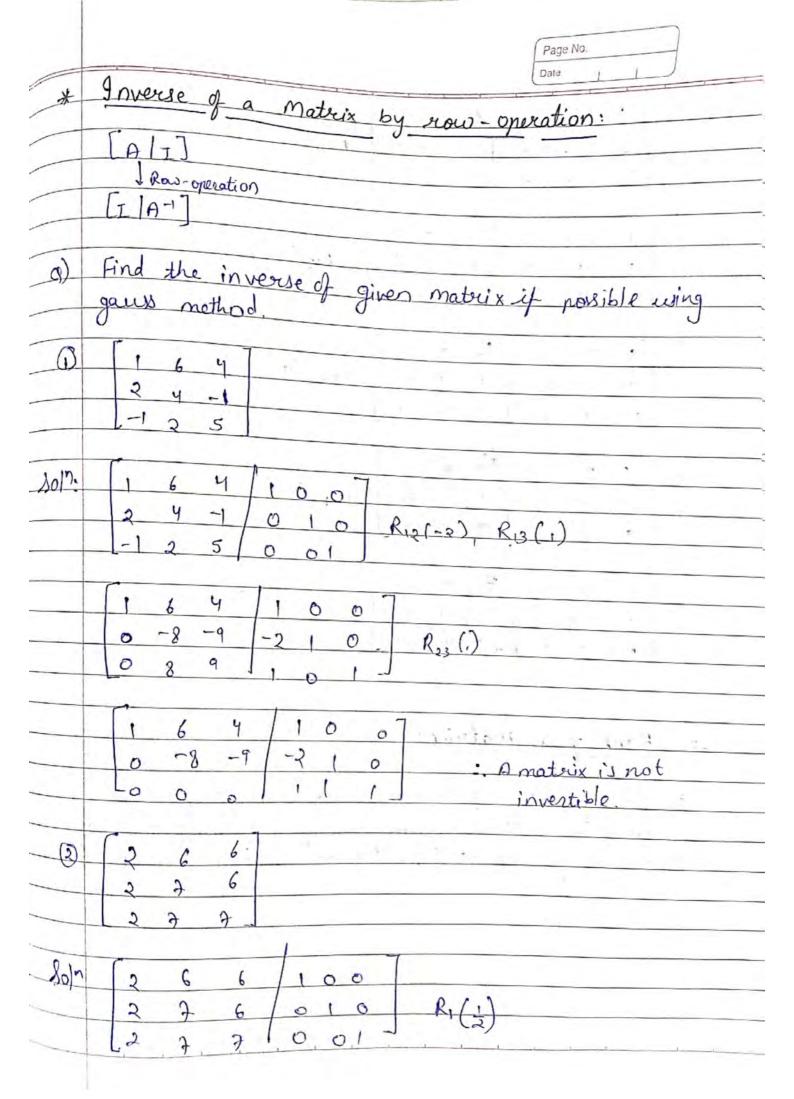


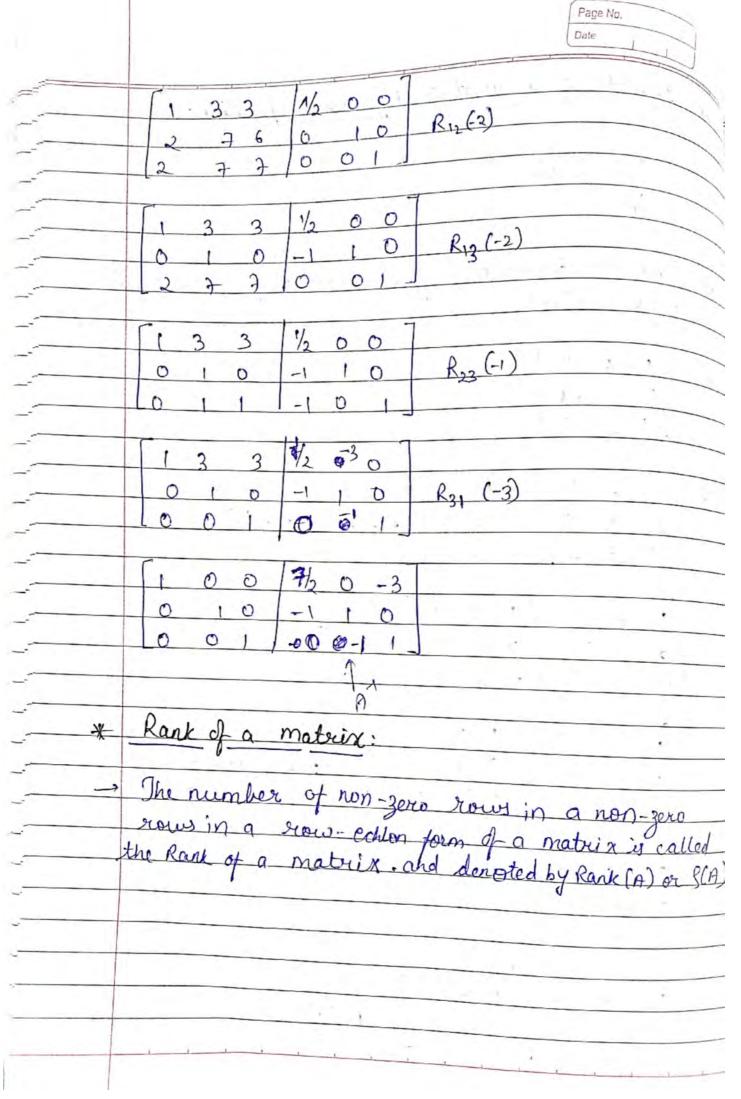


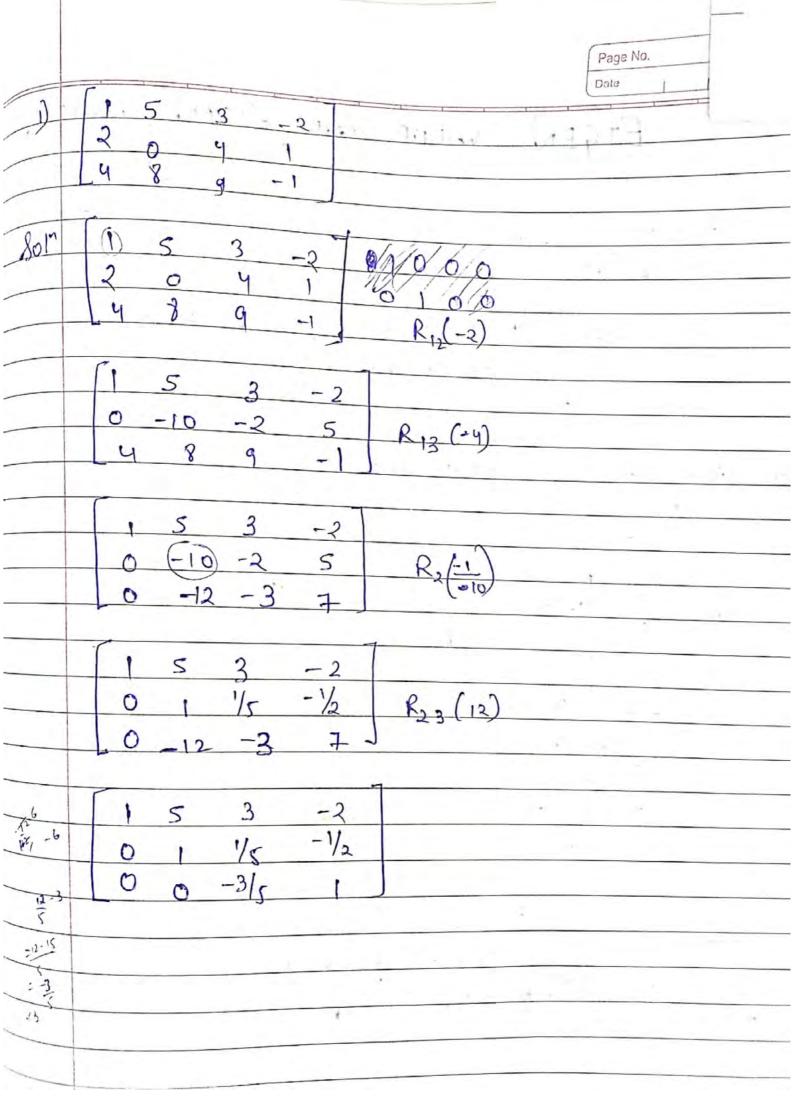


	Page No.
If number of variable is more egg, we always get infinite 301?	than number of
$\begin{array}{c} (2) \chi + 2y - 3z = 4 \\ 3\chi - y + 5z = 2 \\ 4\chi + y + (a^2 - 14)z = a + 2. \end{array}$	
iem Augmented materia [1 2 -3 4 R ₁₂ [3 -1 5 2 R ₁₂ [-3), R13 (-4)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
(i) Now for unique som $a^{2}-16 + 0$	
$a = 16 + 16$ $a \neq 14$ (ii) for infinite $30 n$ $a = 16 = 0$ $a = 16 = 0$	
a = 16 = 0 $a = 4$	

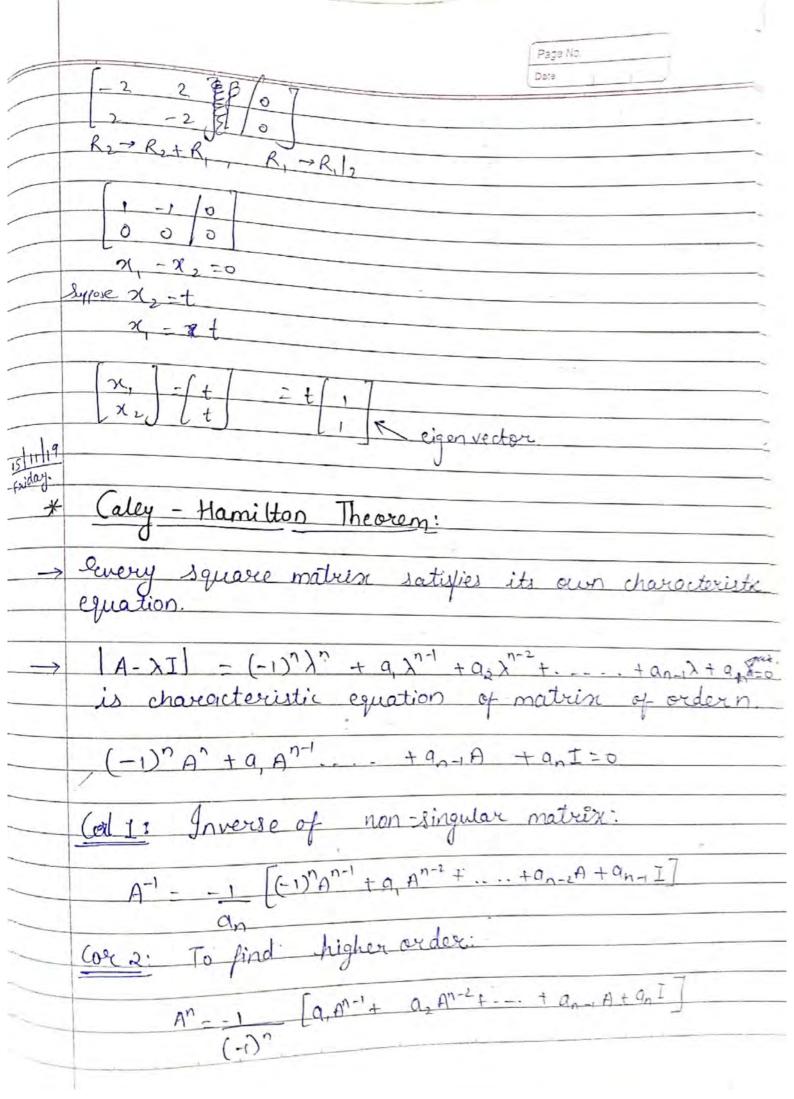
$\frac{q^2 - 16}{q^2 - 16}$ $\Rightarrow a = \pm y$ $\Rightarrow i + a$	=0 b a	2-4-40			Date	
$(iii) for r$ $q^2 - 16$ $\Rightarrow a = \pm 9$ $\Rightarrow i + a$	=0 b (2-4-40				
$(iii) for r$ $q^2 - 16$ $\Rightarrow a = \pm 9$ $\Rightarrow i + a$	=0 b (2-4-40				
$\Rightarrow a = \pm 9$ $\Rightarrow i + a$	Da	= 4		119		
		stem 1	od up	111		
				101.		
9) (1-3) x	(2-3) y = 0				•	
80/n \[\lambda -3	1 / 0	9				
7-3	1 0	£12	(-(X-3))			•
	(-3 -(1-3)2/c	0		2		- (
we get	non-tri	vial so	17			
	=±1				- 4	
=> A= !	×, 2= 2			O _B		
			1			



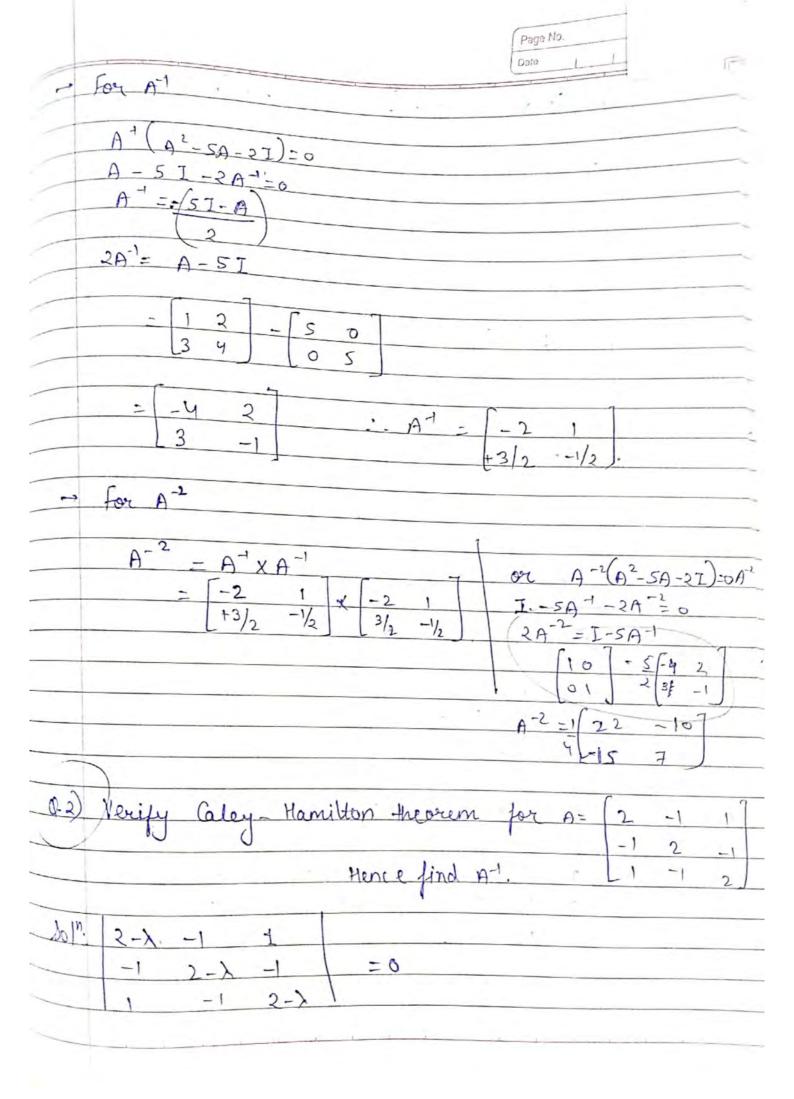




EIGEN VALUE AND EIGEN 10/n A-XI]



F. 1. 22 A? A.T. A-2 wing Caley- Harritton them	
y A - [1 2] 0	///
Solv: 1A-7I = 0	///
3 4-7	///
8 (4-1)-6=0 52+12-6=0	////
λ ² -5 λ - 2 = 0	
3 4	1-1
2 5/ 100, 5 (4-6) 4 2 [5 10] + [2 0]	
-1042 - 7 10	
A=B ² ×A- 1 10 [1 2]	
2 7 X1 +10X3 7 X2 +10XY 15 X1 +22X3 15 X2 +22 XY 37 54 81 118	

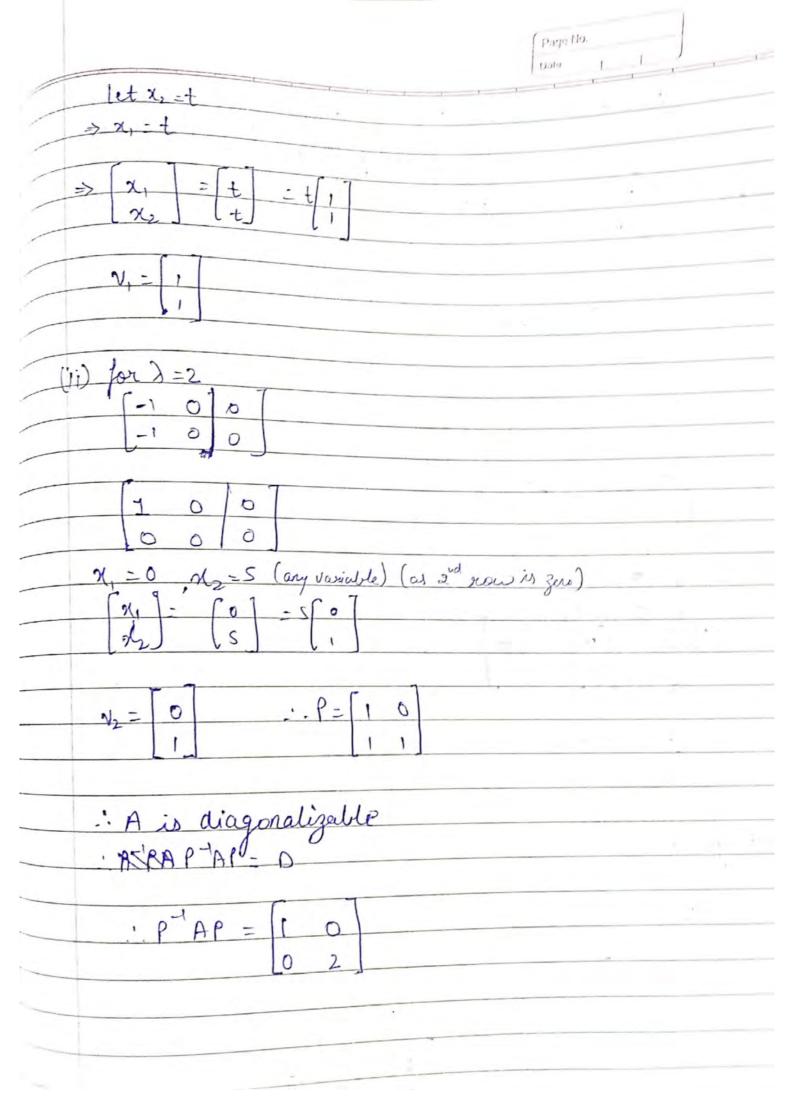


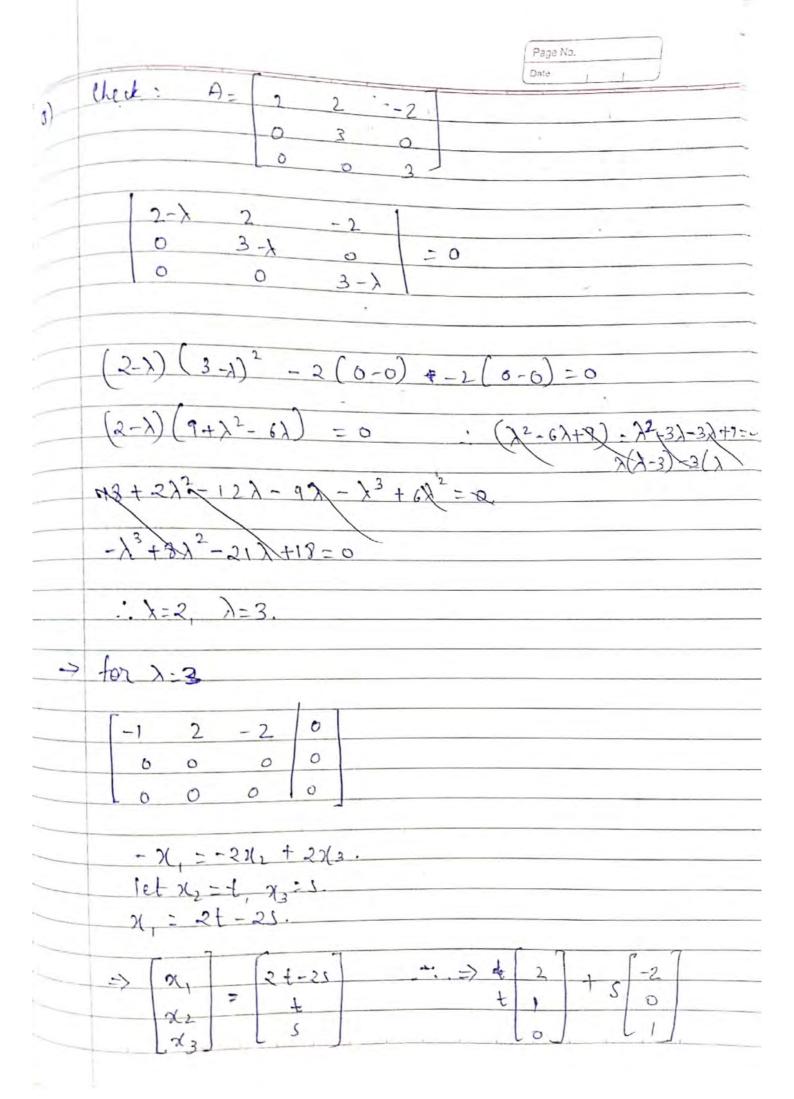
7 +1[1-2+]
$(2-\lambda)\left[(2-\lambda)^2-1\right]+1\left[-2+\lambda+1\right]+1\left[1-2+\lambda\right]$
$\frac{(2-\lambda)((2-\lambda)-1)}{(2-\lambda)^2-2\lambda+6-\lambda^2+4\lambda^2-3\lambda-2+2\lambda}$
$-\frac{1}{(3^{3} + 9A - 4 = 0)}$
\rightarrow $A - 60$
$A^2 = 6 - 5 - 5$
5 -5 6
$A^3 = \begin{bmatrix} 22 & -22 & -21 \end{bmatrix}$
$\begin{bmatrix} -21 & 22 & -21 \\ 21 & -21 & 22 \end{bmatrix}$
1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
$A^{-1}[A^{3}-6A^{2}+9A-4]=0$
$4A = A^2 - 6A + 9I = 0$
$A^{-1} - 1 \begin{bmatrix} \cdot & 3 & 1 & -1 \end{bmatrix}$
4, 1 3 1
9.3) Find characteristic eq " of
A= 2 1 1 , Hence prove
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
0 3 0
A (5 · 5 8)

Characteristic egn: |1-17/=0. $(2-\lambda)$ $[(1-\lambda)(2-\lambda)-(1)(0-0)+1(0-(1-\lambda))$ $(2-\lambda)$ $(2-\lambda-2\lambda-1)^2-1x0$ +21 -1+2 · (2-x) /2-3/42 -11/ $-2\lambda^{2}-86\lambda+2-\lambda^{3}+3\lambda^{2}-\lambda-1+\lambda$ $-\lambda^3 + 5\lambda^2 - 4\lambda + 3 = 0$ $\frac{1}{3} - 5 \lambda^2 + 7 \lambda - 3$ By Caley-Hamilton theorem:

A³-5A²+7A-3I=0. $\bigcap_{A} S \left[A^{3} - SA^{2} + 7A^{-3} I \right] + 8A \left[A^{3} - SA^{2} + 7A^{-3} I \right] + \left(A^{2} + A + I \right)$ $A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{-3} I \right) + A \left(A^{3} - SA^{2} + A^{2} + A^{2} + A^{2} A \right)$ · A 5 (0) + A (0) + A 2 + A + I

===	(18 11 19
*	Piagonalization:
	Let A be a square matrix of order N. The matrix A is said to be diagonalizable if there exist an invertible matrix P such that P'AP:0 where D is the diagonal matrix.
	Imp. Note:
	DA square matrix of order N is diagonalizable if the matrix A has exactly N linearly independent eigen vectors.
	2) It all the eigen values of a square matrix da distinct then A is always diagonalizable
	3) Two similar matrices have the same determinant
	Determine the diagonal matrix from A=[1 0] is A is diagonalizable
- And:	The characteristic eq": 1-20 -0
	(1-x)(5-x)-0=0
	To find eigen vectors: (i) for $\lambda = 1$
S-1	$-\chi_1 + \chi_2 = 0$
-	74=1





	Page No. Date
>	Theorem:
	If the matrix A is diagonalizable & PTAP=0, then AK=PDKP
	$P = \begin{bmatrix} 1 & 2 & -2 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
	$f' A f' = 0 = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 3 \end{bmatrix}$
	$AS = P^{-1}DS.P$
alile.	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
(Mary)	Find a matrix Publish diagonalize a natrix A, verify PTAP = D, where A = [4 1]
101:	eigen values:
	S, - sum of diagonal me elements = $7' = -2\lambda^2 - 7\lambda + 10 = 0$ S ₂ = det(A) = 10 $\lambda^2 - 5\lambda - 2\lambda + 10 = 0$ $\lambda(\lambda - 5) - 2\lambda(\lambda - 5) = 0$
	$\lambda^2 - 7\lambda + 10 = 0$ · ligen values ave 5 & $\lambda = \lambda$

