

Aggsin Smeyt-1

Que Teast Consistency:-10

$$\begin{bmatrix} 2 & -3 & 7 \\ 3 & 1 & -3 \end{bmatrix} \times \begin{bmatrix} x \\ y \\ 2 & 19 & -41 \end{bmatrix} \times \begin{bmatrix} x \\ y \\ 2 & 3 \end{bmatrix} = \begin{bmatrix} 5 \\ 13 \\ 32 \end{bmatrix}_{3\times 1}$$

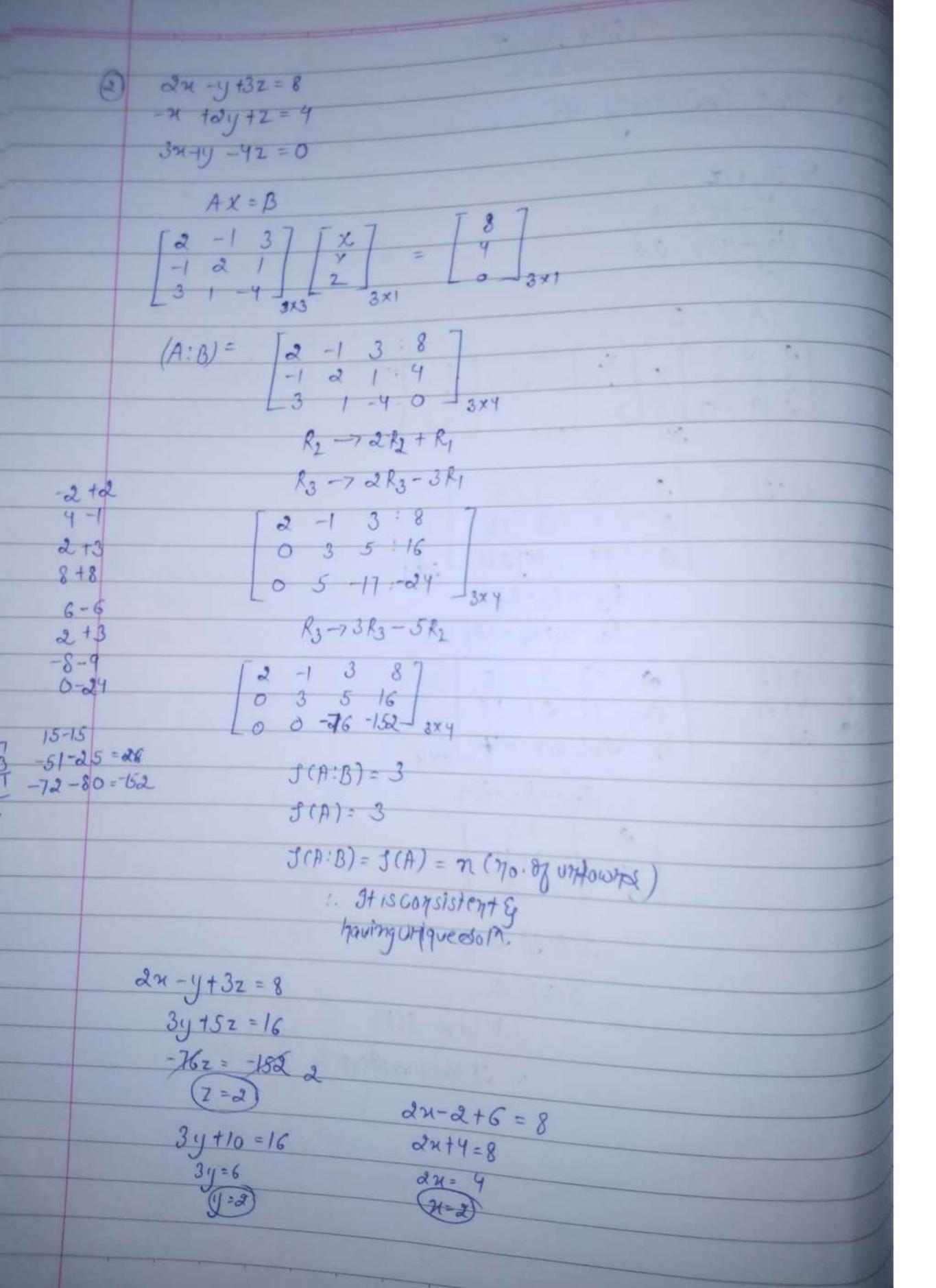
$$(A:B) = \begin{bmatrix} 2 & -3 & 7:5 \\ 3 & 1 & -3:13 \\ 2 & 19 & -47:32 \end{bmatrix} \xrightarrow{3xy}$$

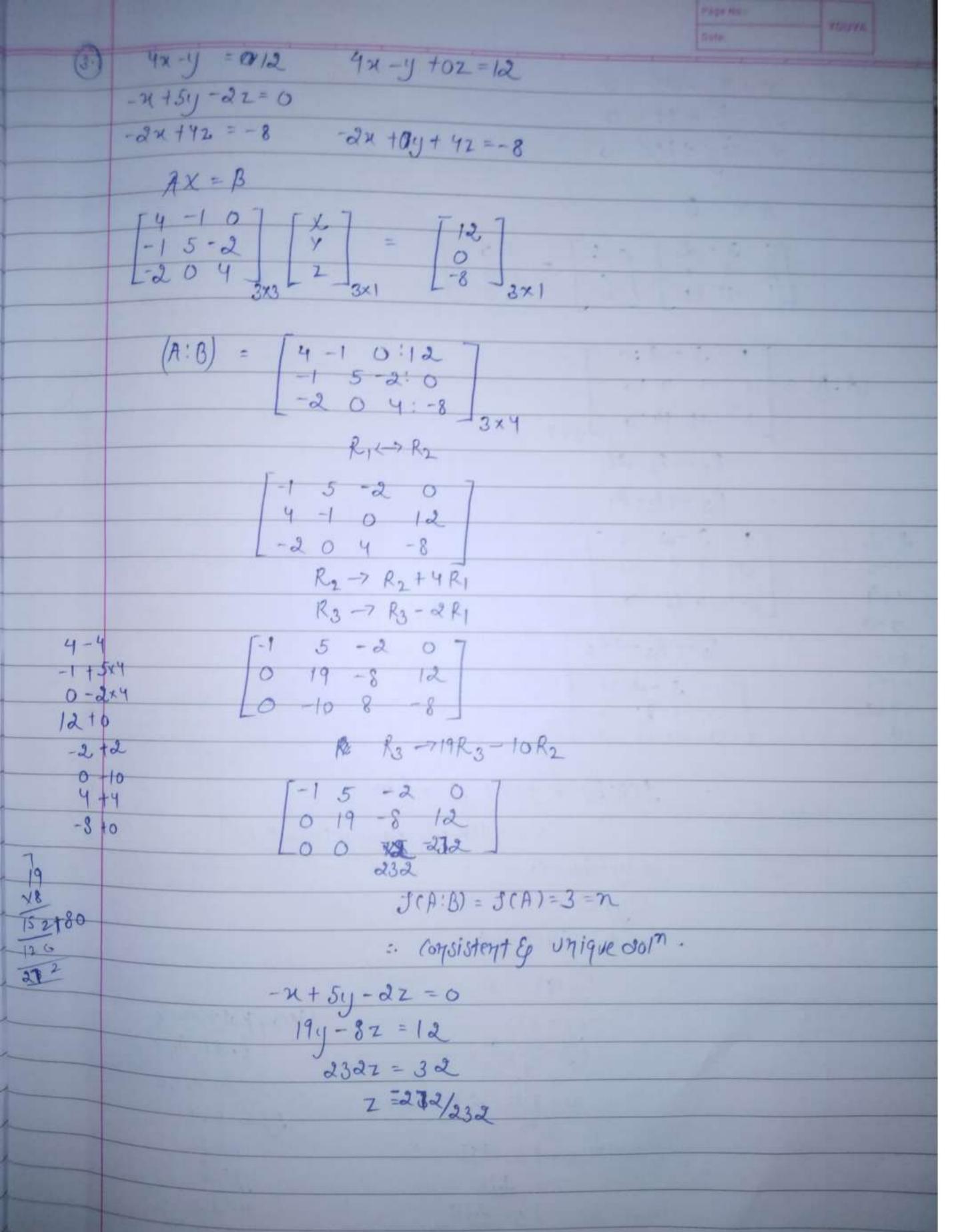
$$R_3 - 7R_3 - R_1$$

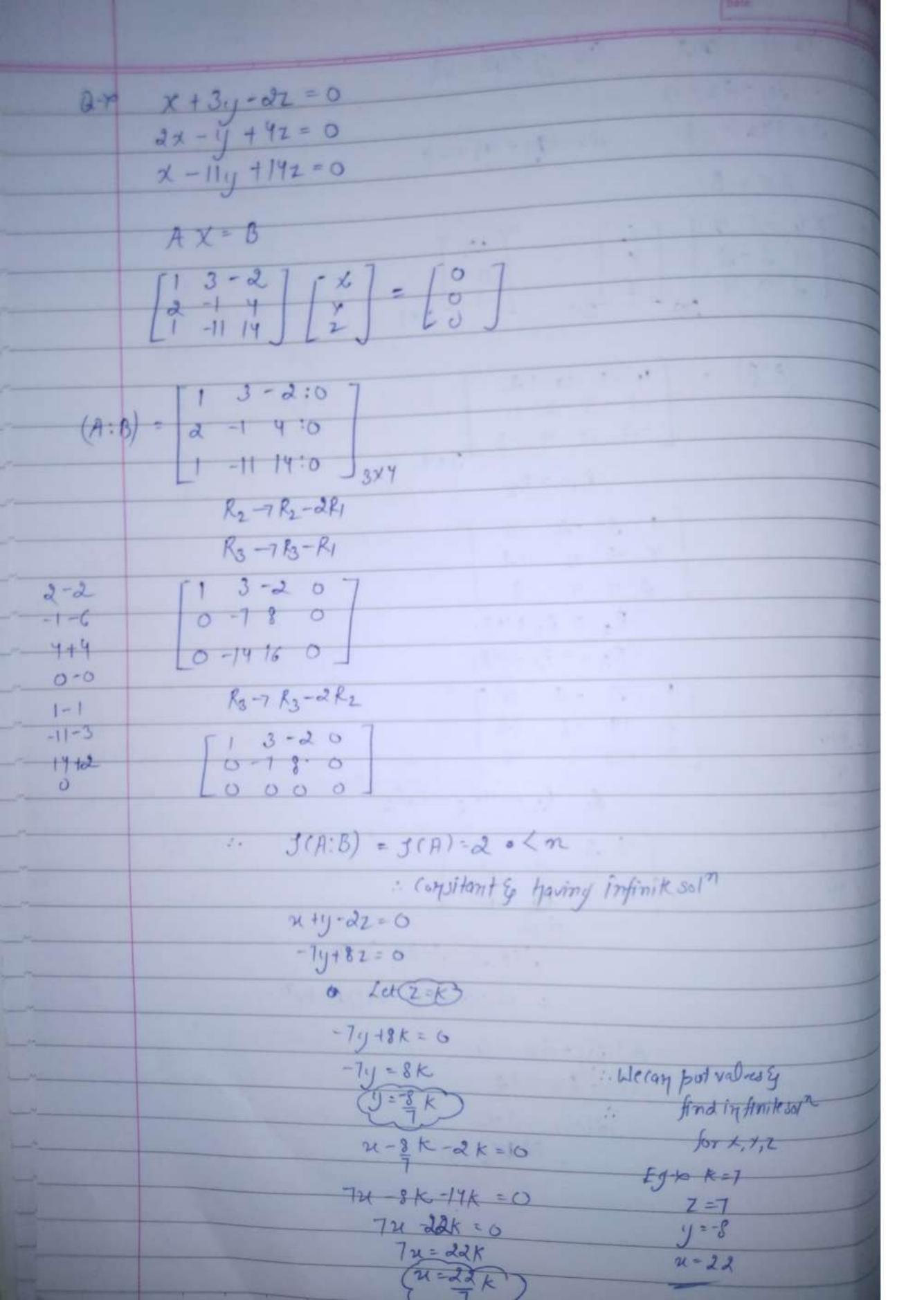
$$R_2 - 72R_2 - 3R_1$$

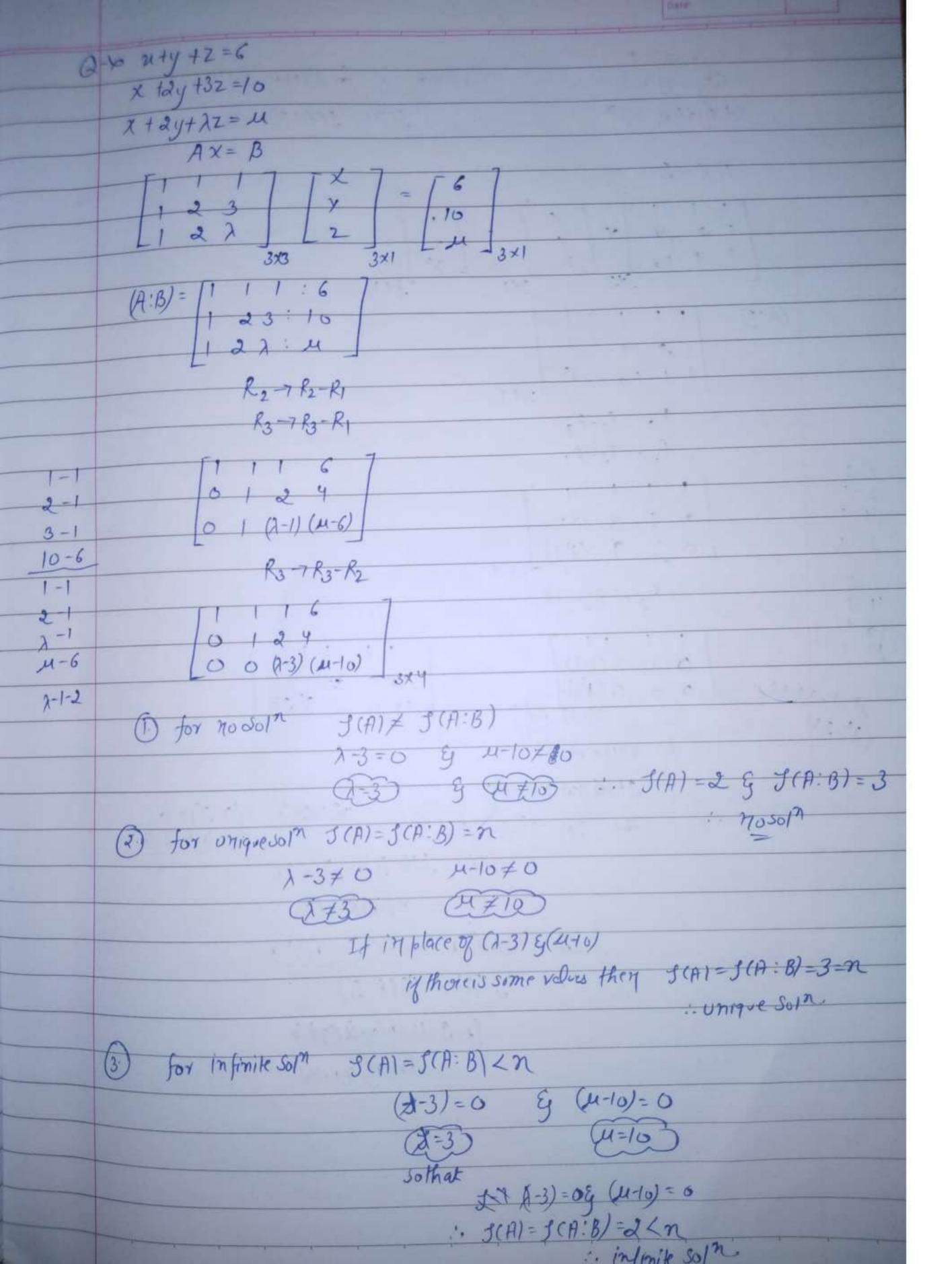
$$\begin{bmatrix}
2 & -3 & 75 \\
0 & 11 & 2711 \\
0 & 0 & 5
\end{bmatrix}$$

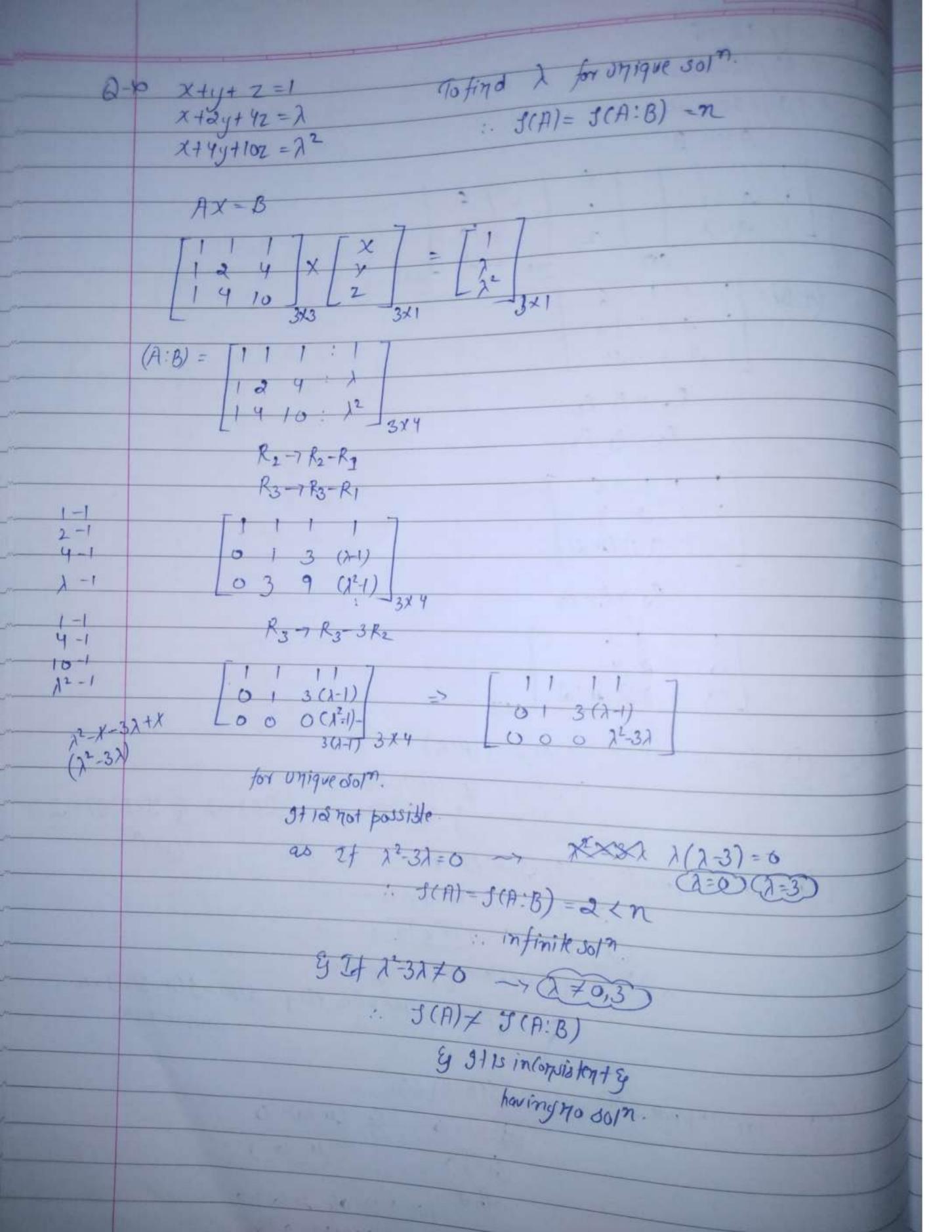
. It is inconsistent & no doing

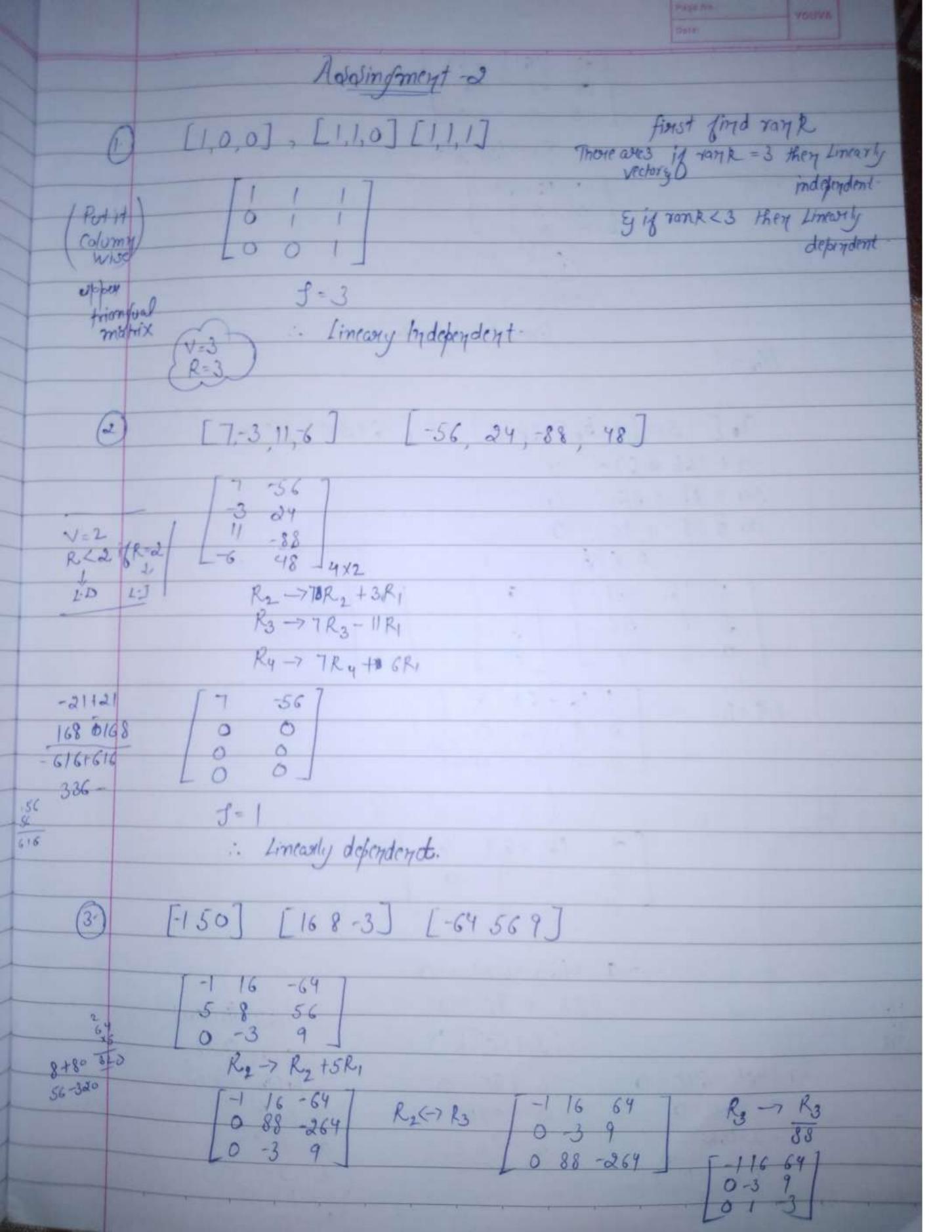


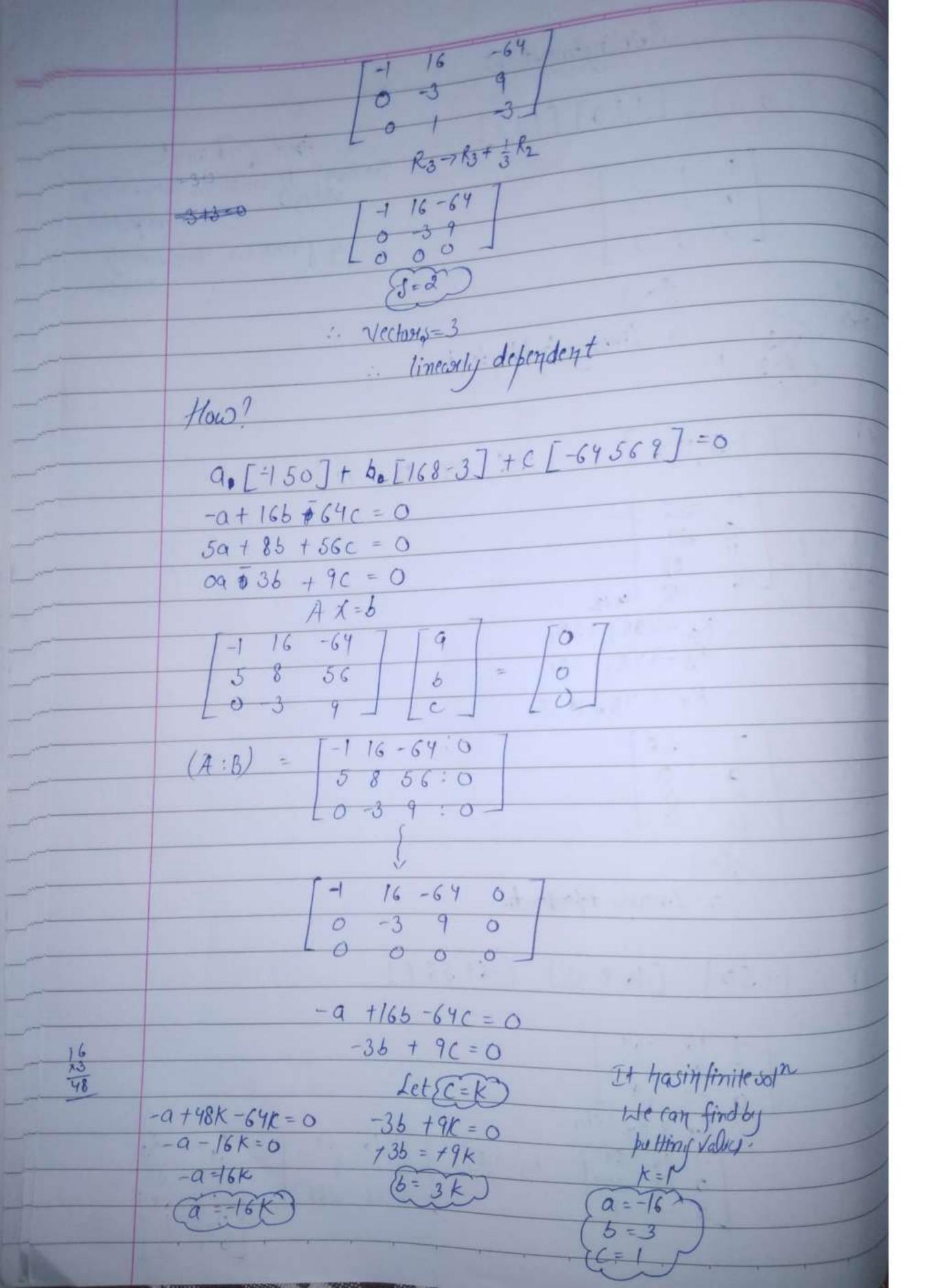


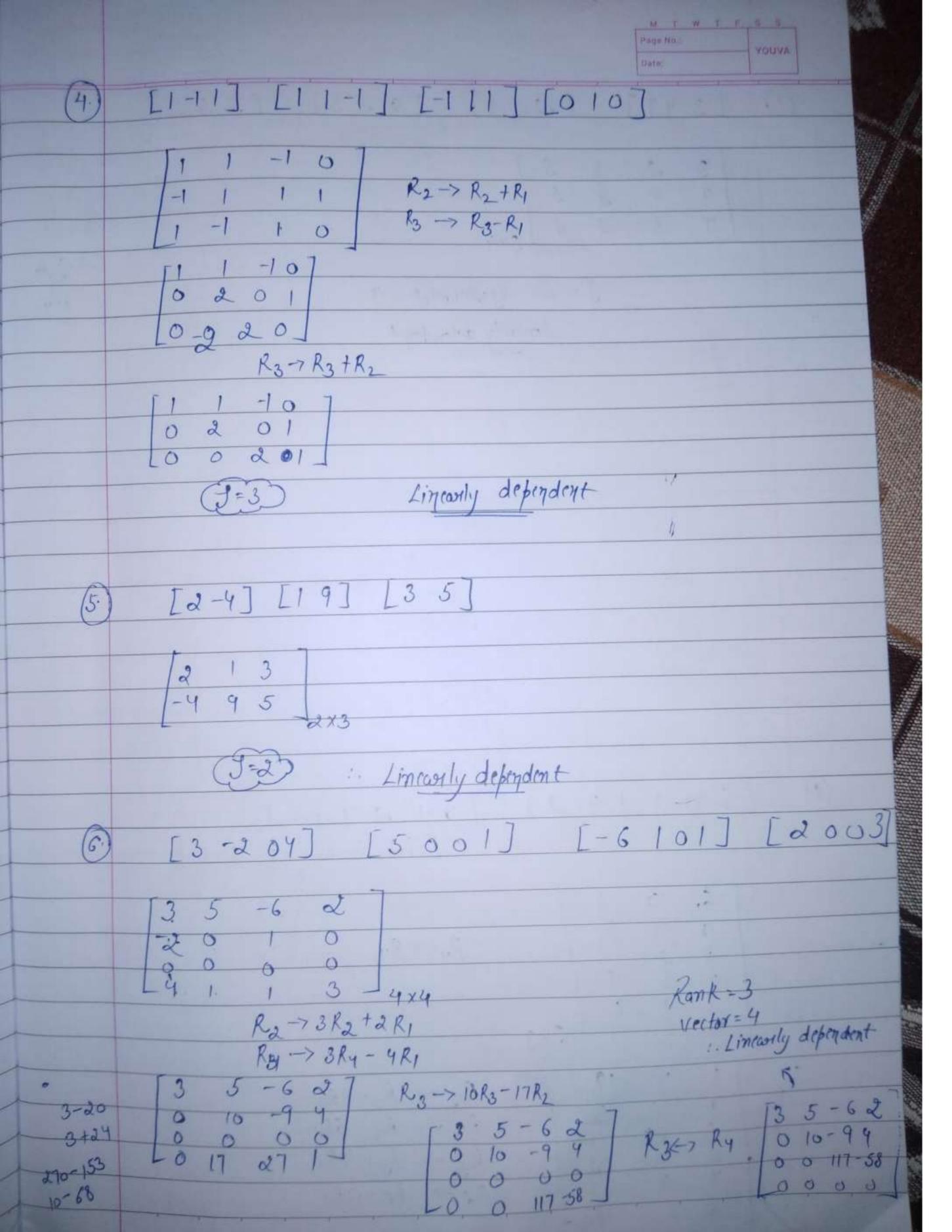


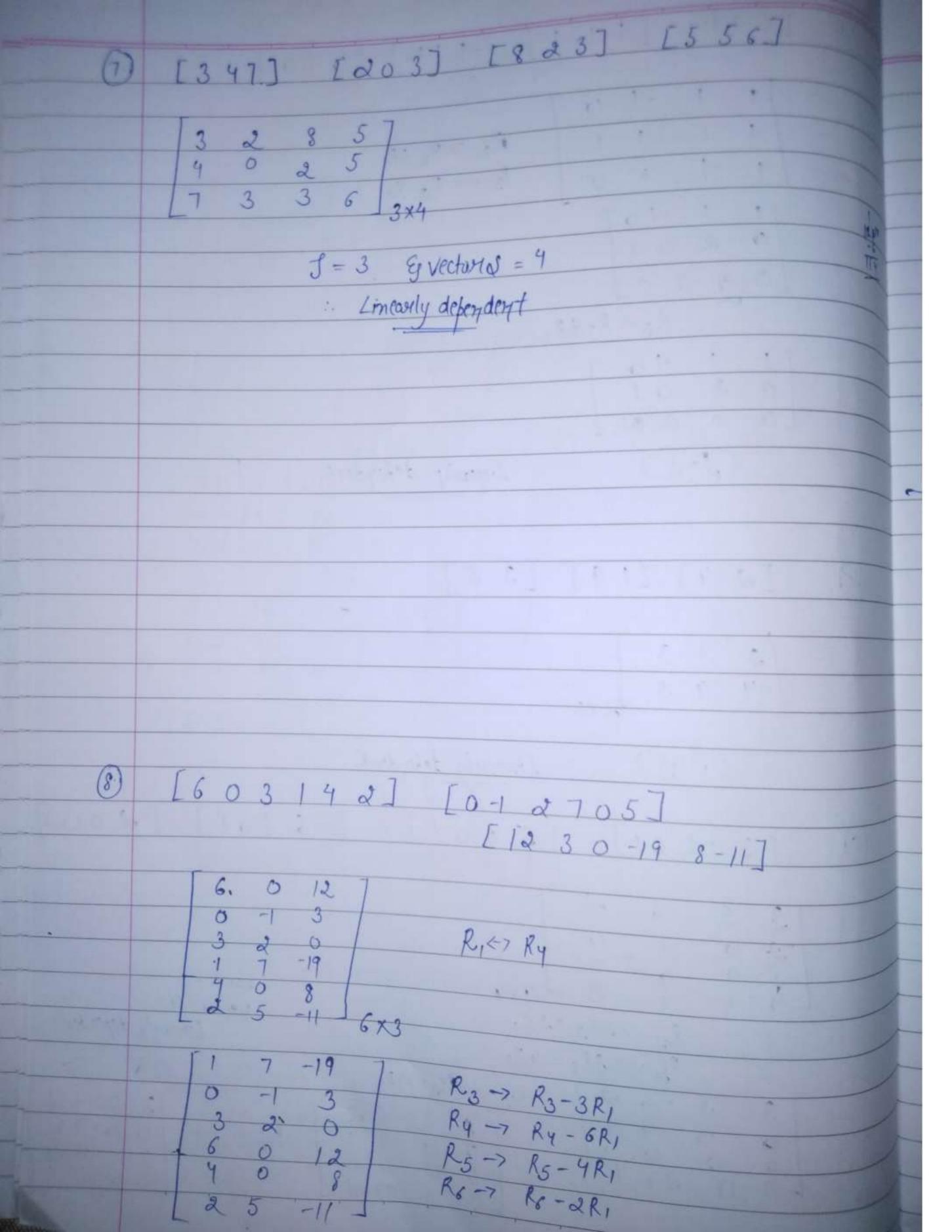


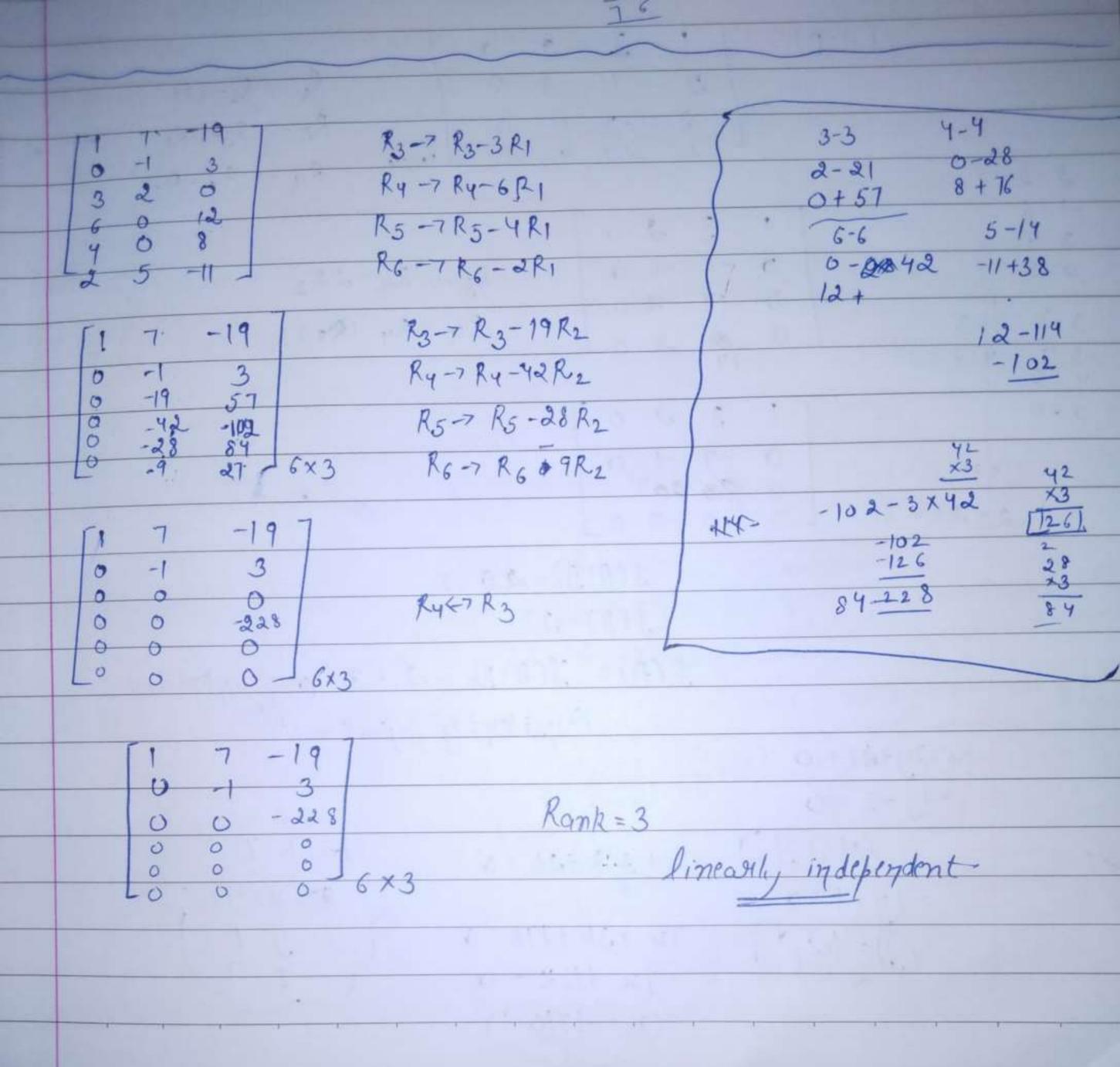












#

Eigen Values & Eigen Vectors:-

Let A = [aij]_nxn be asquare matrix of order nxn & I be unit

(i) Characteristic matrix of A:-10 The matrix (A-AI) in called the characteristic matrix of A

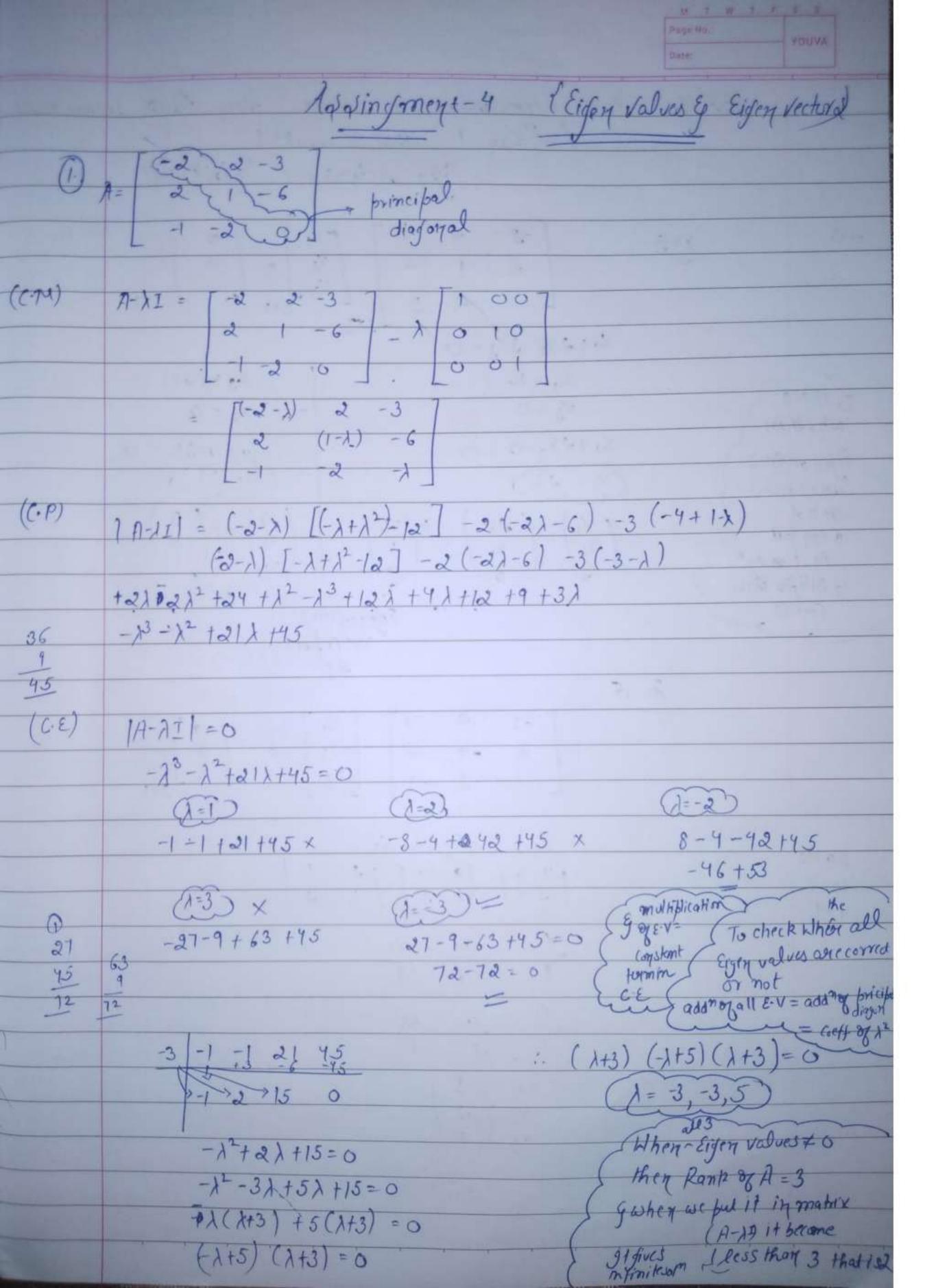
 $A-\lambda I = \begin{bmatrix} a_{11}-\lambda & a_{12}+\cdots & a_{1n}+\lambda \\ a_{21}-\lambda & a_{22}-\lambda & \cdots & a_{2n}+\lambda \\ \vdots & \vdots & \vdots & \vdots \\ a_{m1}-\lambda & \cdots & a_{mn}-\lambda \end{bmatrix}$

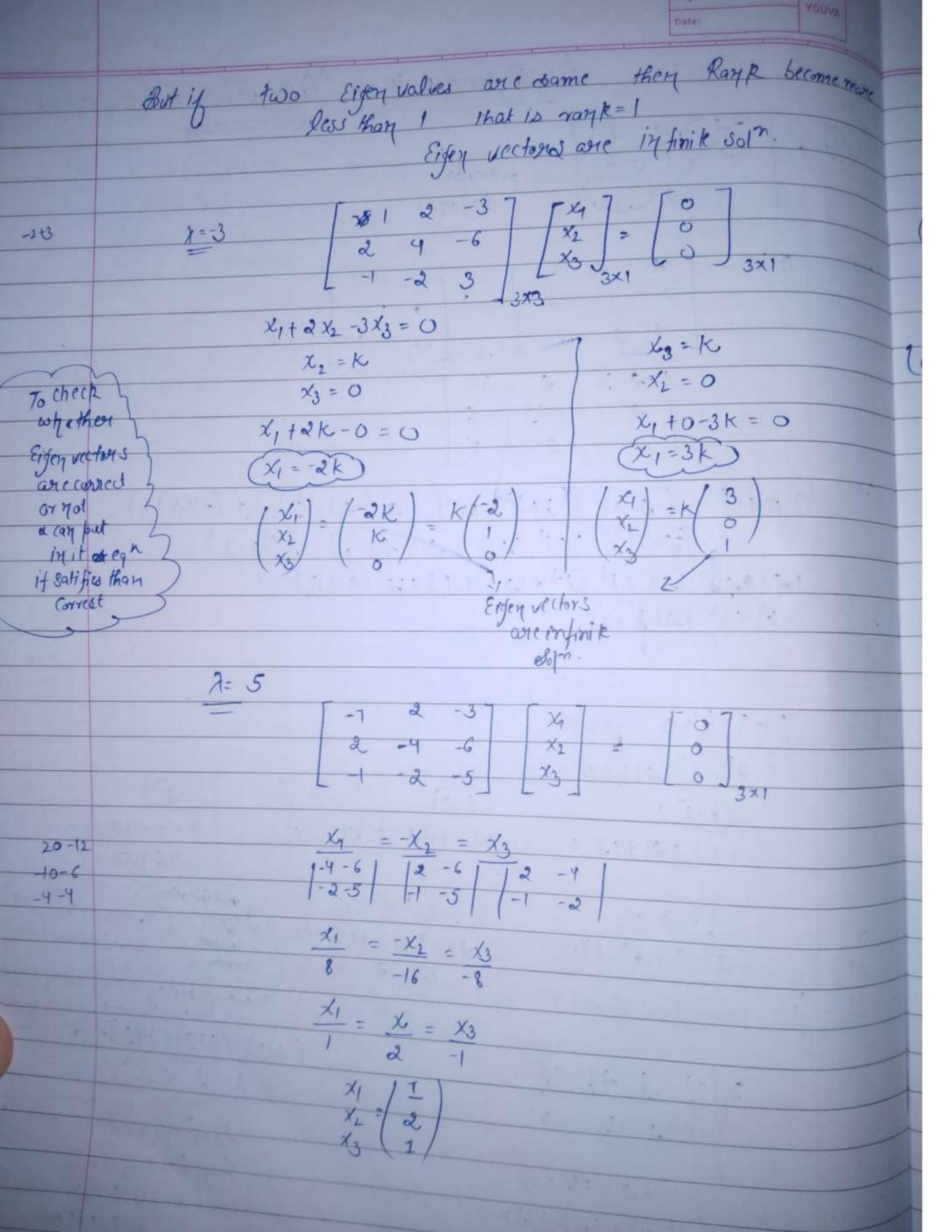
(ii) Characteristic polynomial -> The determinant 1A-211 is called Characteristic polynomial

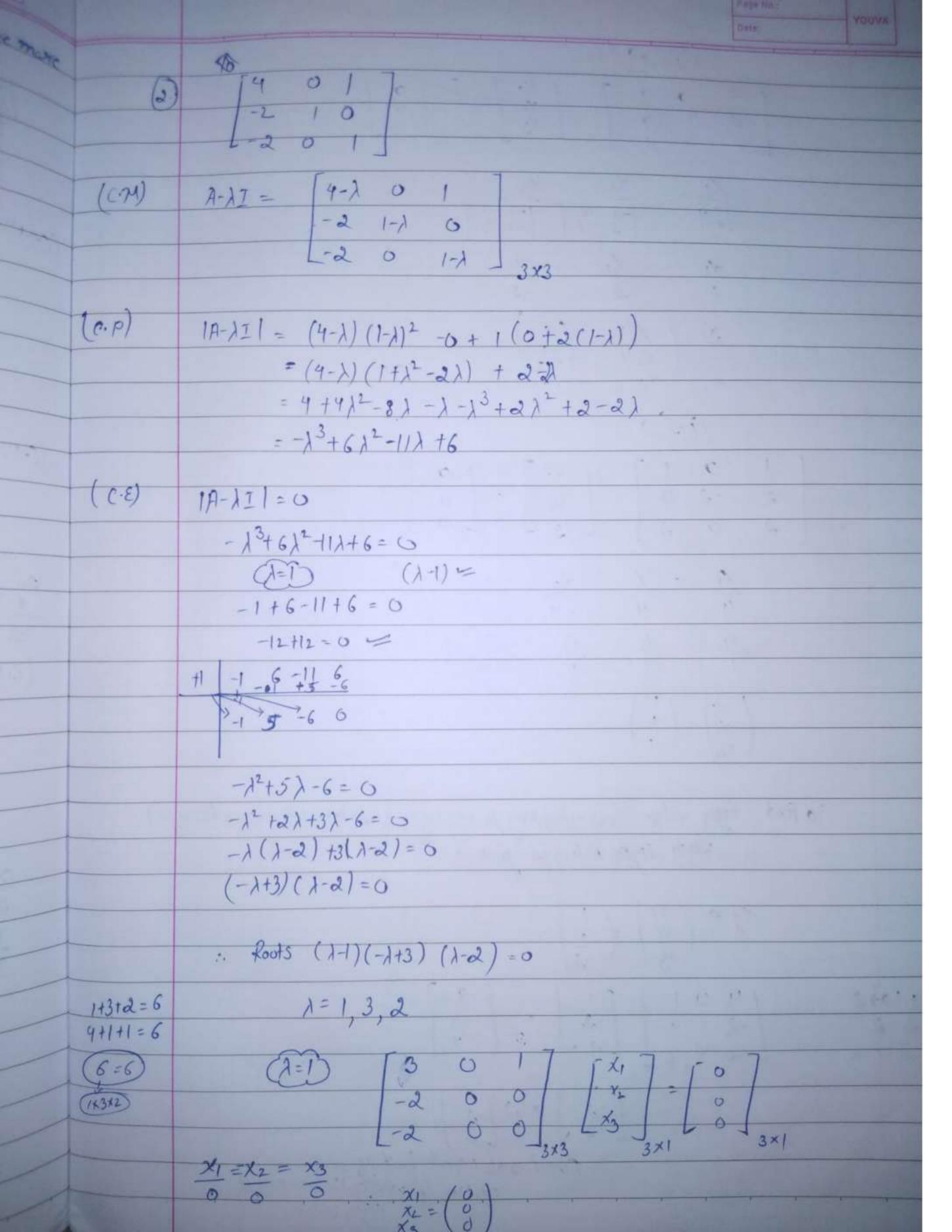
(iii) Characteristic Eq. - > Them equation IA- XI = 0 is called characteristic equation & A. The moots of equation are called characteristic moots or Eigenvalues or Latent values of matrix A.

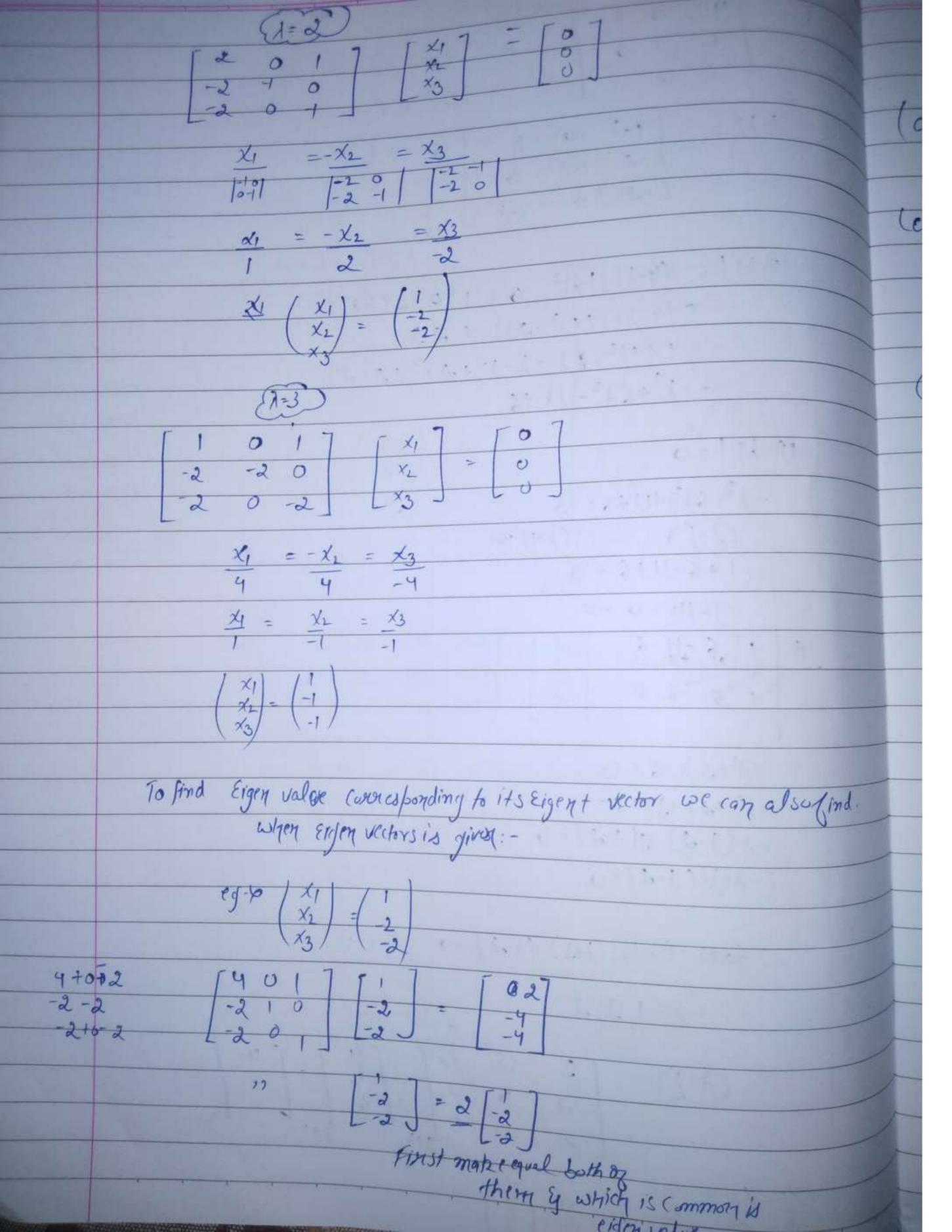
(iv) Eigen vectors: - If $\lambda = \lambda_1$ is Eigen values of non matrix A. Then you zero som $x = \begin{bmatrix} x_1 \\ y_2 \end{bmatrix}$ of eqn.

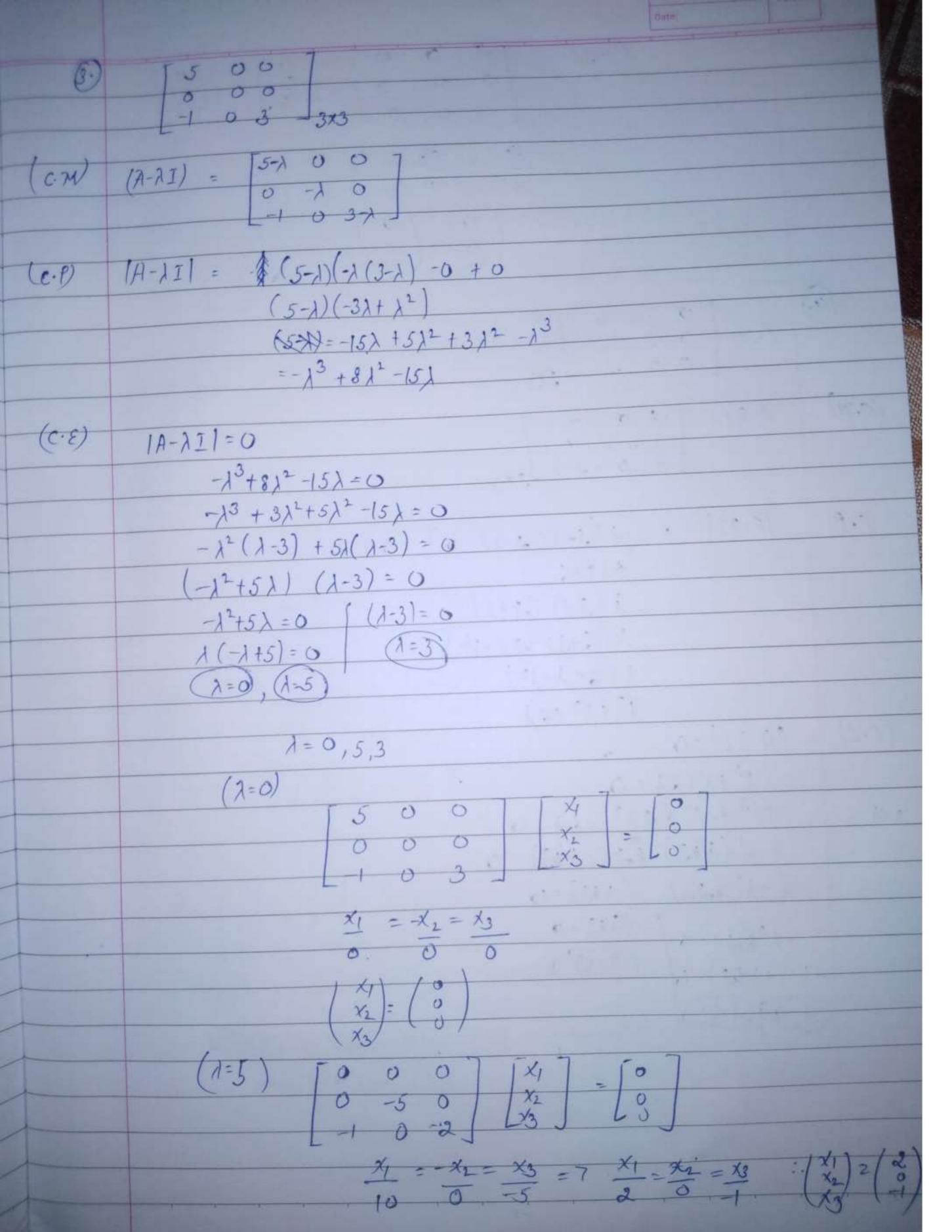
(A-2,1) x = 0 is said to be eigen vector of A cosonesponding to eigen values $\lambda = \lambda_1$











$$(A - 3) \begin{bmatrix} 2 & 0 & 0 \\ -3 & 0 & 0 \\ -3 & 0 & -3 \end{bmatrix}$$

$$x_1 = -x_1 = x_3$$

$$x_2 = -x_3$$

$$x_3 = (-3)$$

$$x_4 = (-3)$$

$$x_4 = (-3)$$

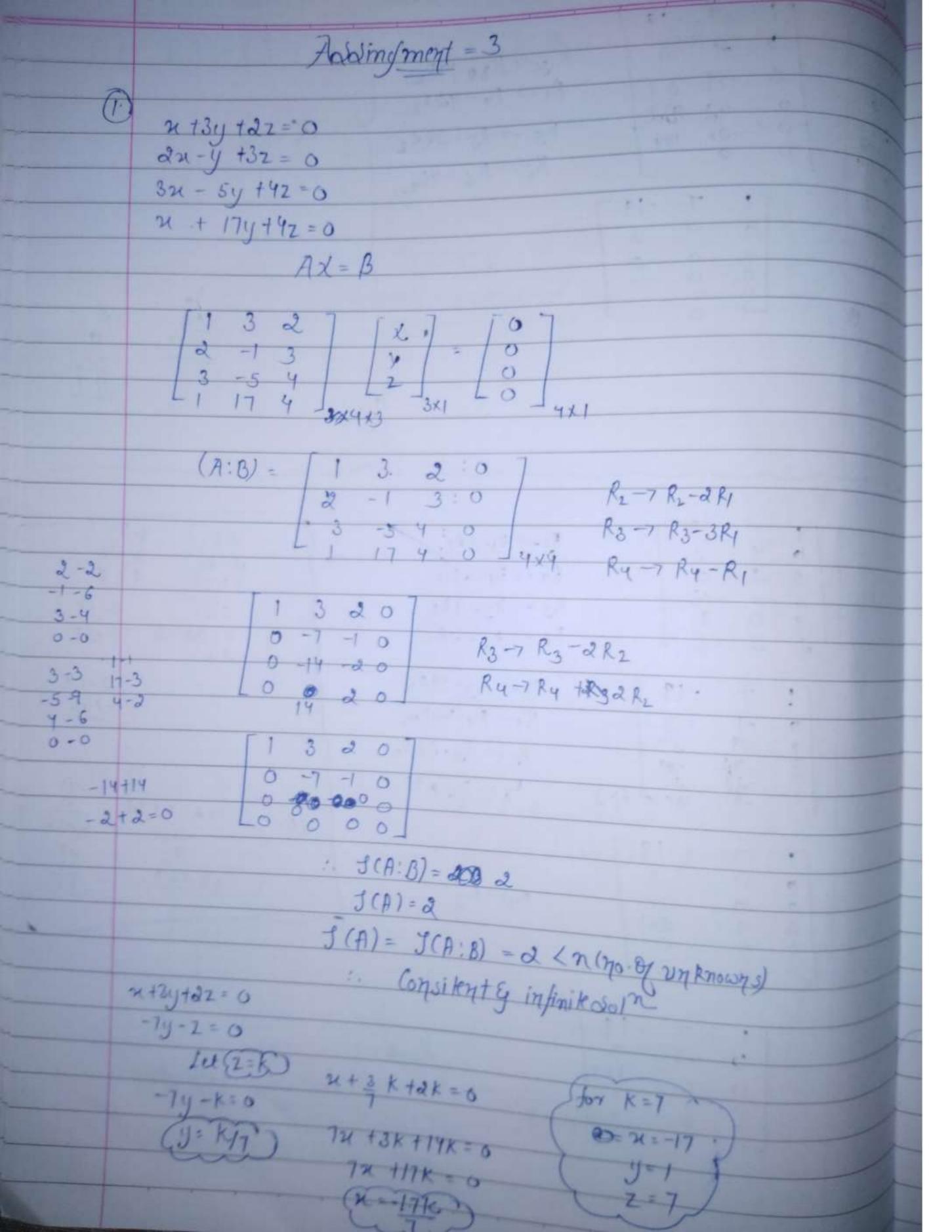
$$x_5 = (-3)$$

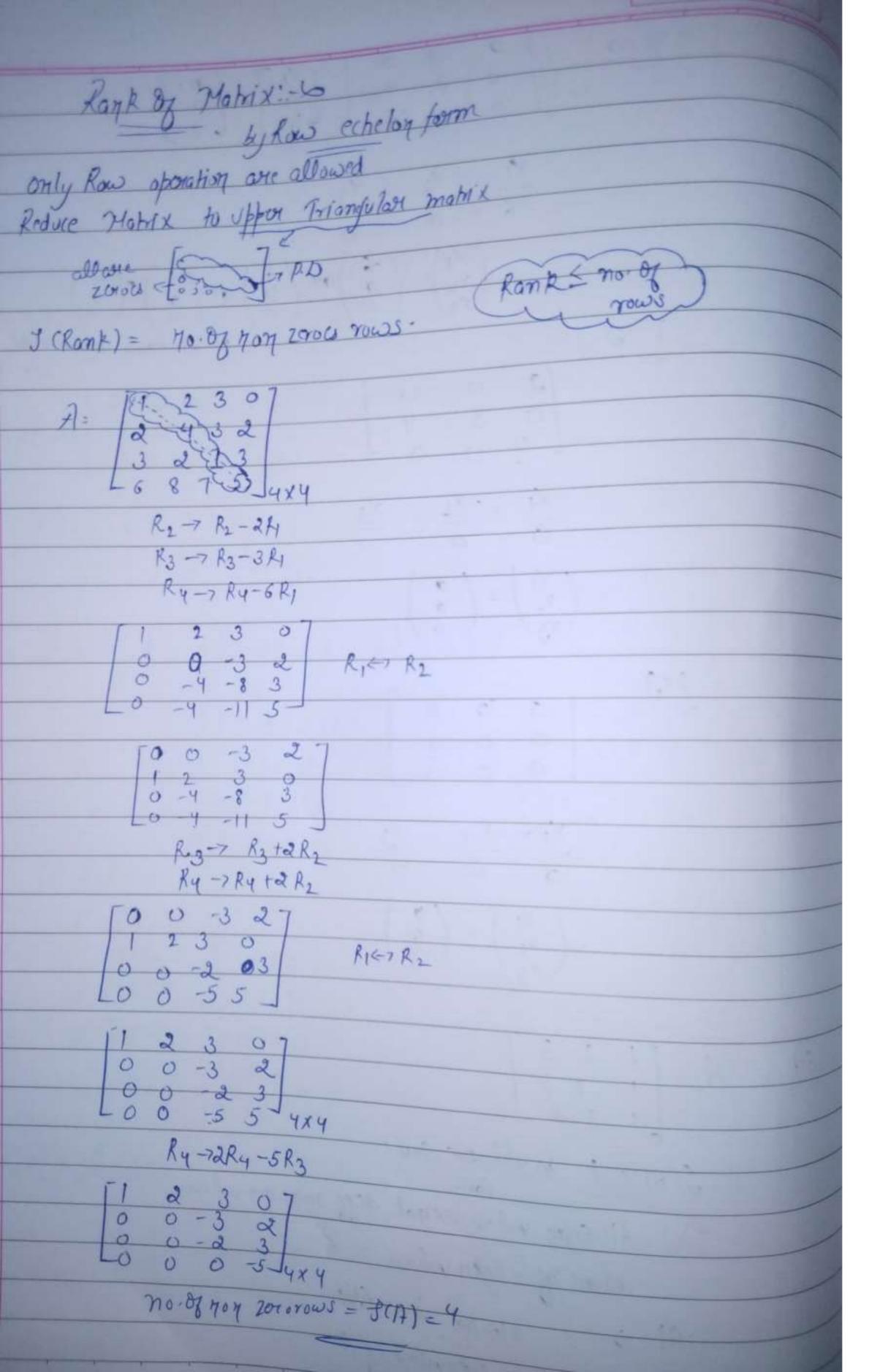
$$x_6 = (-3)$$

$$x_6 = (-3)$$

$$x_7 = (-3)$$

$$x_8 = (-3)$$





(Passectostic
$$A = \begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$$

(Passectostic $A = \begin{bmatrix} 3 & -1 \\ -1 & 2 \end{bmatrix}$

(Passectostic $A = \begin{bmatrix} 3 & -1 \\ -3 & -1 \end{bmatrix}$

(A-1-3) $A = \begin{bmatrix} 3 & -1 \\ -3 & -1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

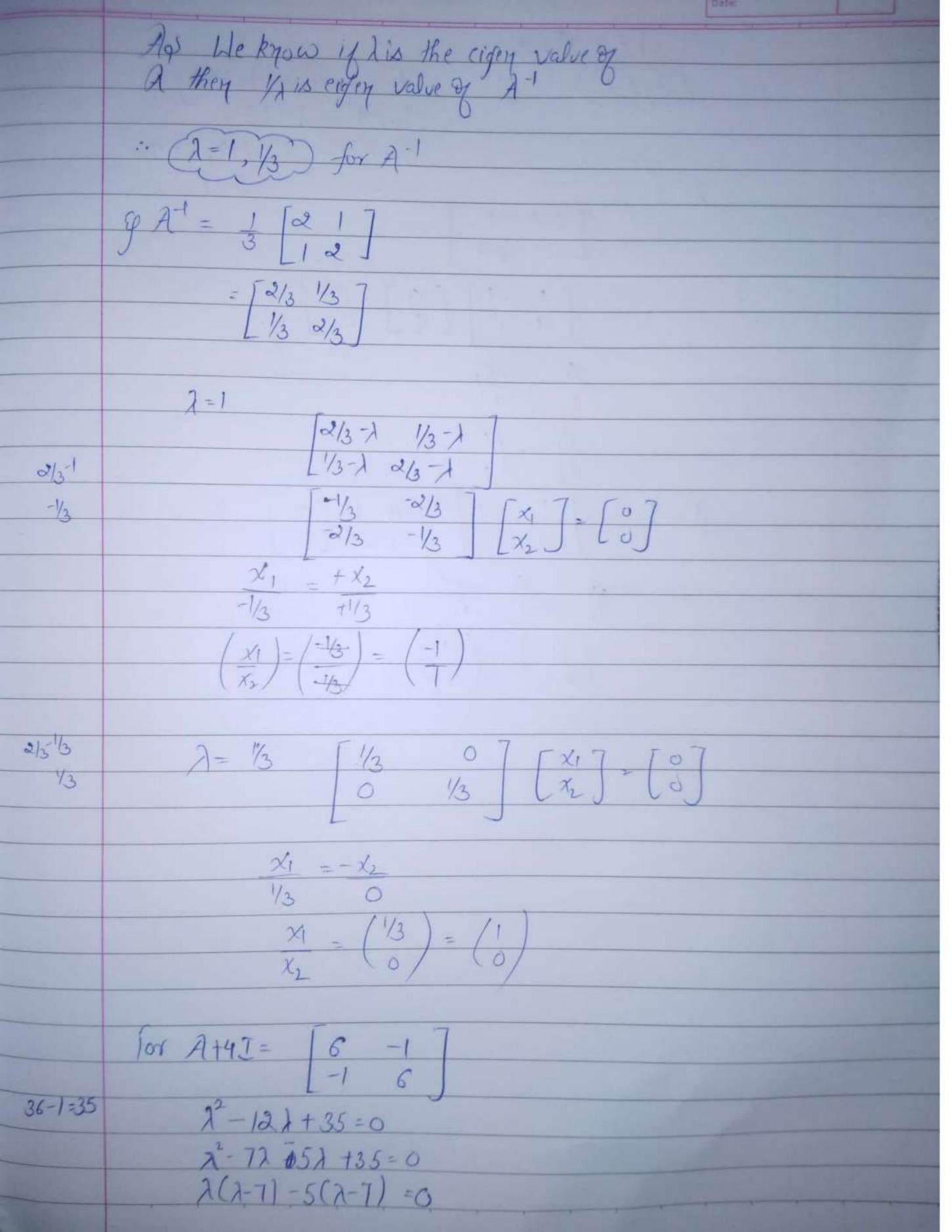
(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

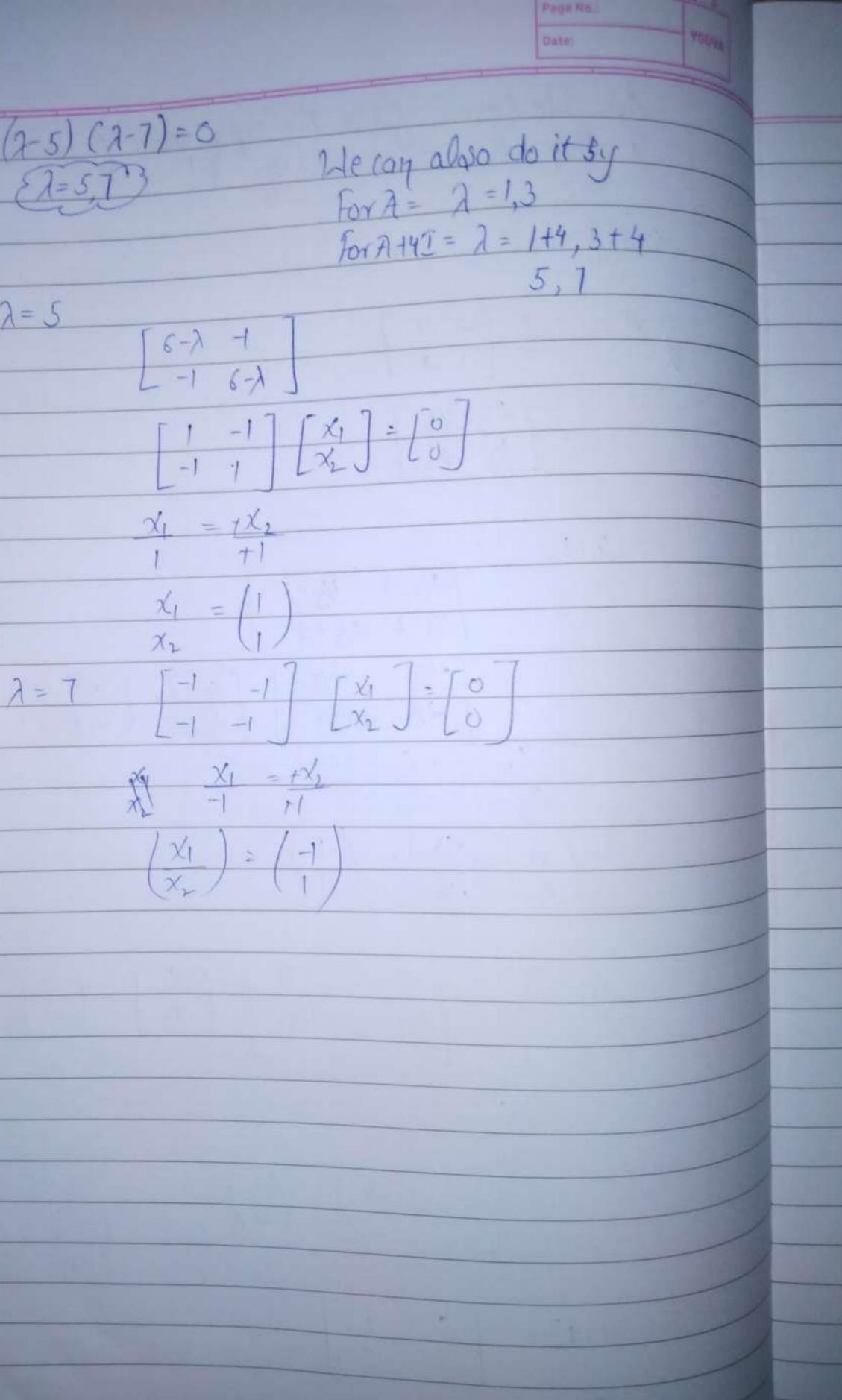
(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1) $A = \begin{bmatrix} 3 & -1 \\ -1 & 1 \end{bmatrix}$

(A-1



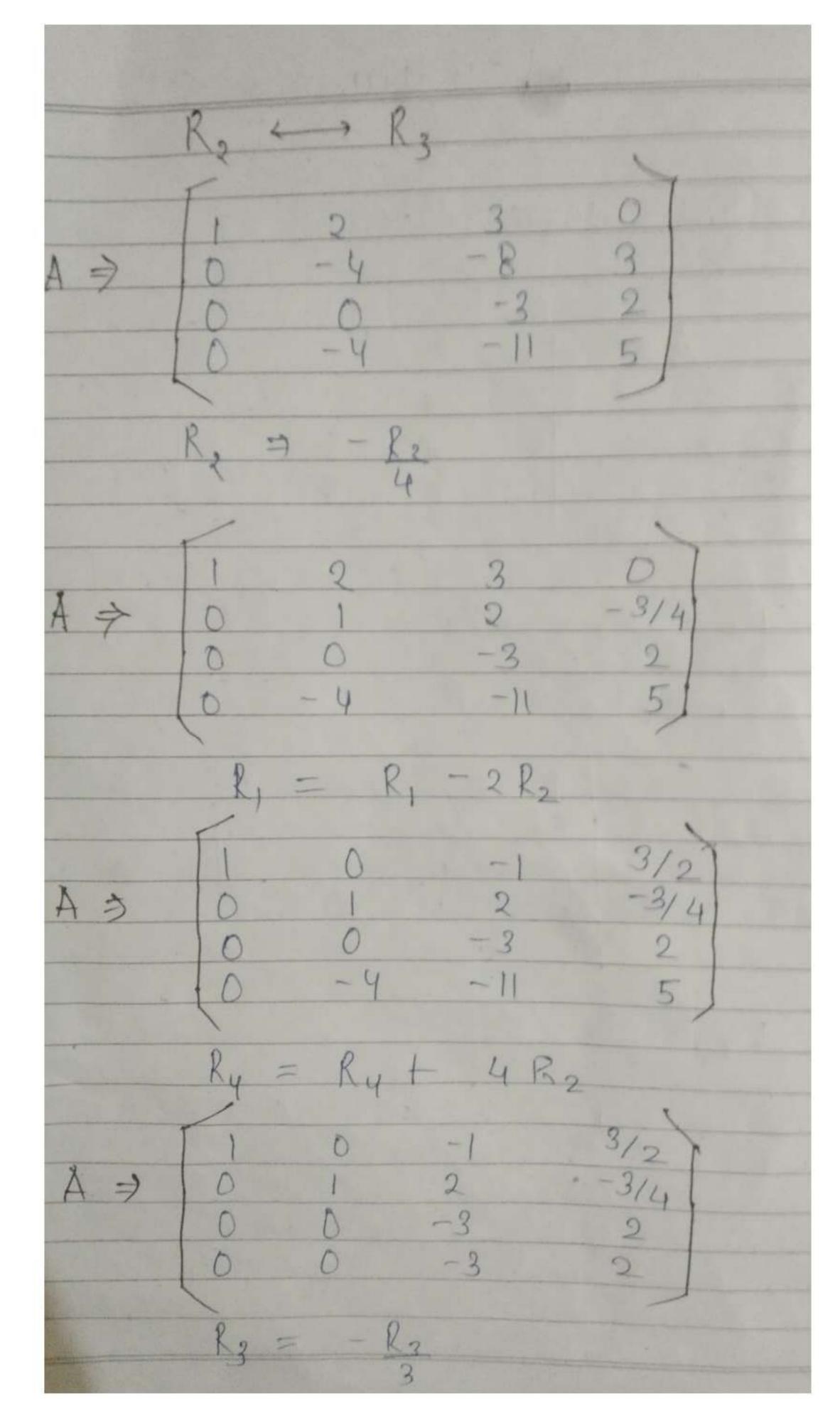


(2-5) (2-7)=0 (2-5) (2-7)=0

6-7

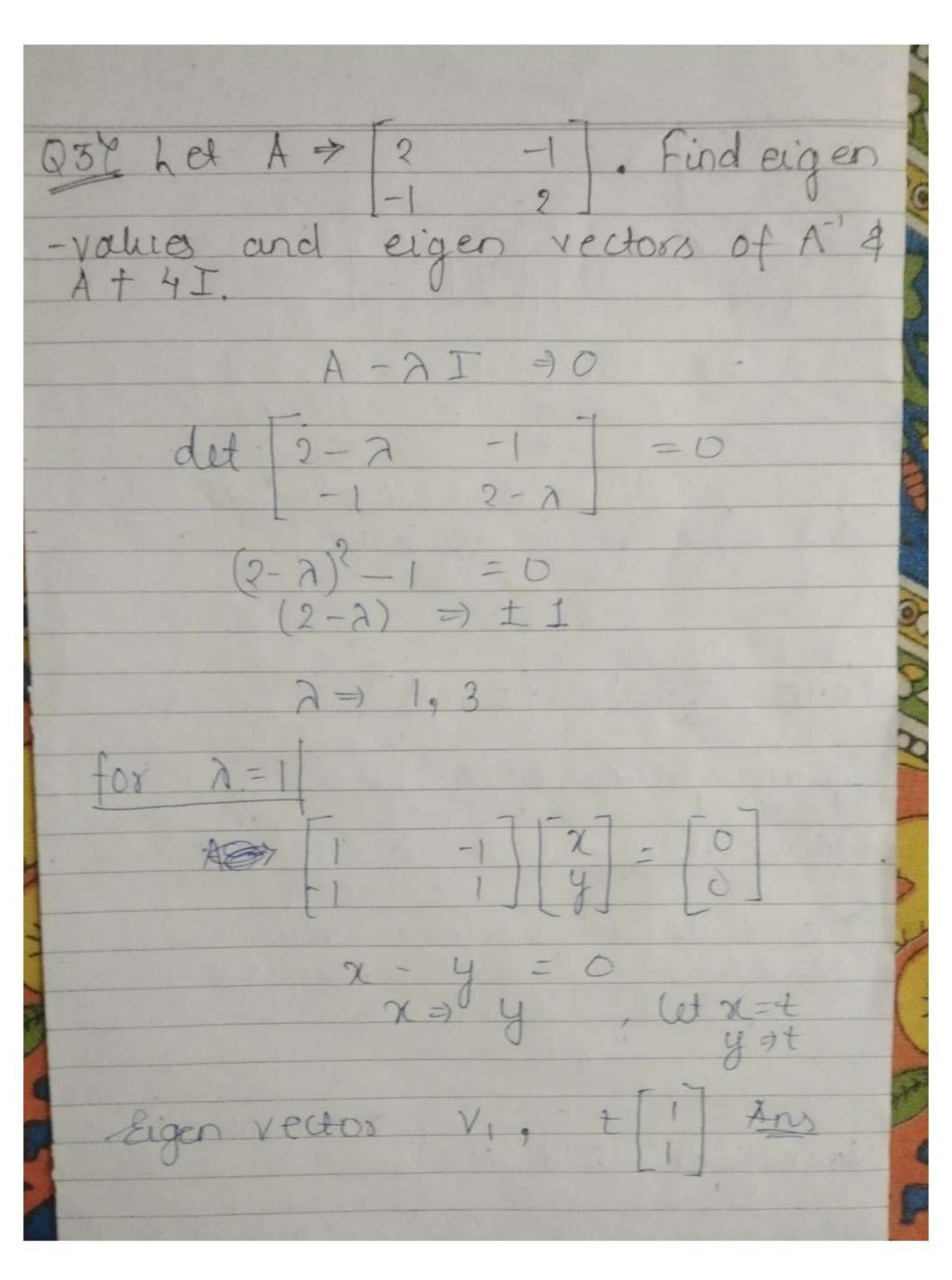
7=5

Assi groment Jank?



3/2 A = -3/4 .0 - 2 RI 5/6 -3/4 -2/3 A= 0 -3 2 2 - 2 Rz 5/6 7/12 + 3 Rs 5/6

thet we be the yector space of all symmetric 2 x 2 P, be, the Linear Tronsfo a b = (a-b)+(b-c)x+(c-a) Find rank & nullity of T. Since the demension of maximum egree of polynomial T => 2. a de subset of Ker Kew matrix dimension of because there's only one independe parameter as Acc. to rank millidy Theorem: rank (T) + nullity (D) & dim(W) rank(T) +1 So, rank of T is 3, & nullity is I.



og eigen value V, > alues of A will as of A - TT Vo - + [-1] Now, for A + 4 I beigen values for A + 4, Twill
the 2, +4, 2, +4 => 5, 7

eigen vectors are same > and - Solve by Gauss-Siedel Mothod Take three Herations) 3x-0.14-0.27 77.85 0.1x-74-0.3x 7-19.3 0.3x-0.24+10x 771.4 with initial values x(0)=0, y(0)=0, Z(0)=0 > xx+1 > 7.85 + 0.14x+0.02 1.4-0.32 +10.24

erala-11: 1) => 7.85 + 0.1(0) + 0.2(0) => 2.6167 9.3 -0.1 (2.6167) -0.3(0)=72.7956 71.4-0.3 (2.6 | 67)-0.2 (39756) erat -2 (2) => 7.85 + 0.1(2.7956) +0.24 1373 $\pi(2) \Rightarrow \mp 1.4 - 0.3(3) - 0.2(3) = 3$ Herath-3 :> $\chi(3) = (7.85 + 0.1(3) + 0.2(3))/3 \rightarrow 3$ 1(3) 7 (-19.3 -0.1(3)-0.3(3))/-7 => 3 After, three iterat" 744, 7 ~ 3 80 value of x=3, y=3 &Z=13

956 Define consist	tent or inconsistent
Consista	ne solution)
Dependent (unfinite soin) Inconsis (No solu	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0
R3 -> R3 - 2 R2 \[\begin{align*} \begin{align*} \ R_3 & - 2 R_2 & -1 \\ 0 & -7 & -1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{align*} \]	, Ry - Ry + 2R2 100 000

2-) Homogenety T(KU) + KT(u) (Ka +Kbx + Kcx2) => (ka+Kb+Kc+1) + (ka+Kb+ *c+1) x + (ka+ Kb+ Kc+1) x2 -> K(a+1) + K(b+1) x + K(c+1) x2 Hence Priored. Hence, It's a linear Transforment? Q72 Determine whether set $5 \rightarrow \{(1,2,3),(3,1,0),(-2,1,3)\}$ is a basis of Vo(R). In case & is not a basis, determine the dim' of basis; of subspace spanned by S. a(1,2,3) +b(3,1,0) +((-2,1,3) +0,00) a + 3b - 2c = 03a+3c=0

only one sol" is possible is Independent. Since dun' of V3(R) 18 3 and S also contains 3 vector. 3 And S - IX then it spans Vg (R) making it a basis for Vg (R). 380 Using Jacobis method (perform 3x-64 +2 Z +23 -4x+9-270-15 x-34+7x +16 Xo=)1, yo=)1, Zo=>1 =) first eq 1 x = 1 (23+61-22) second eq? y > (-15+4x+x) thuid eq ? 7 7 [[16-x+34] x(0)=1, y(0)=1, \(\pi(0)=1\) I terat 1-1) :> 2(1) -> (23+6-2)/3 => 9 y(1) + (-15+4+1) -> -10

996 Althing Transformat suppose we have a 2-D image supposes as gold on pinols. sweate wantend centro. | coso - sino 0 | - notat of image by o to scotate it assecund cerose. 1.) Translat to origin beanslate en image, so that it centre alligns with origin: 2) Rotal? Apply rotat matory. ") Translat" Back branslate it back with its original post-by adding coordinates

Brief Description of Linear Transformate for computer Vision for rotating 2-D image. 2D images involves applying a suctat matrix to each pixel coordinate. This matrix rotates points counter clockwess by an any I around the origin. It preserves peometeric proporties like po distances tæsts like image allignment Object detection in computer X COMPLETE