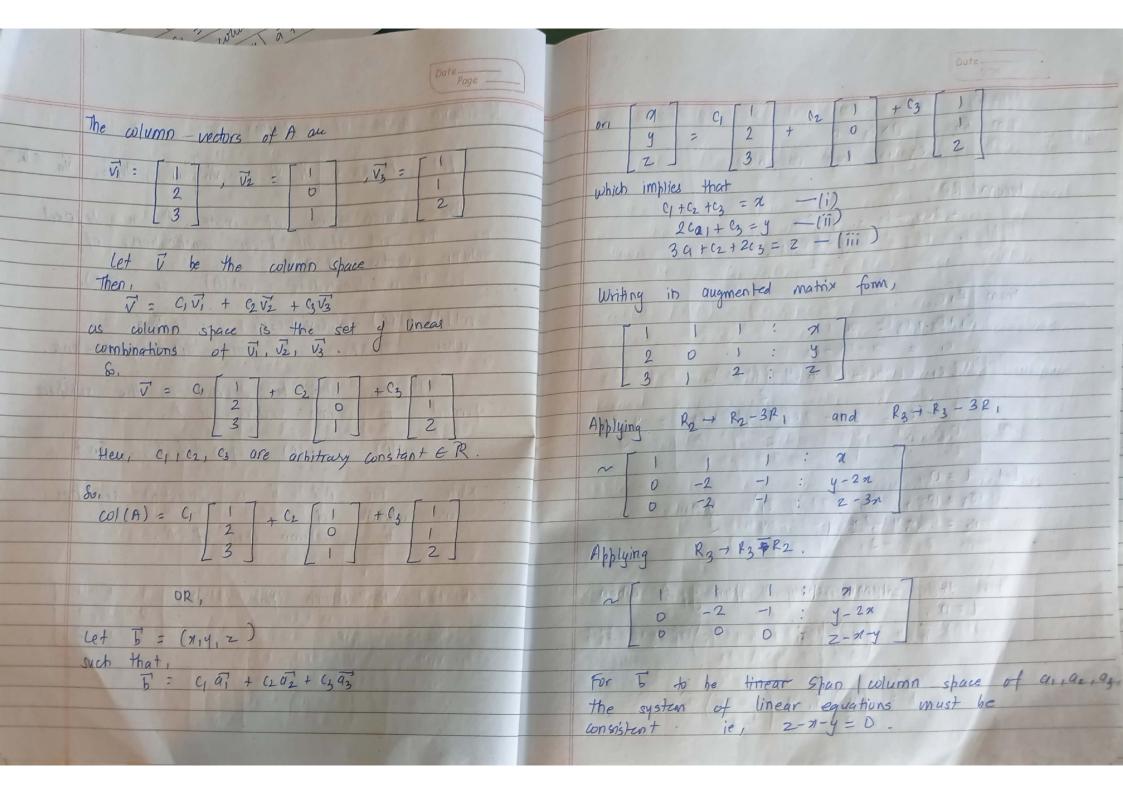
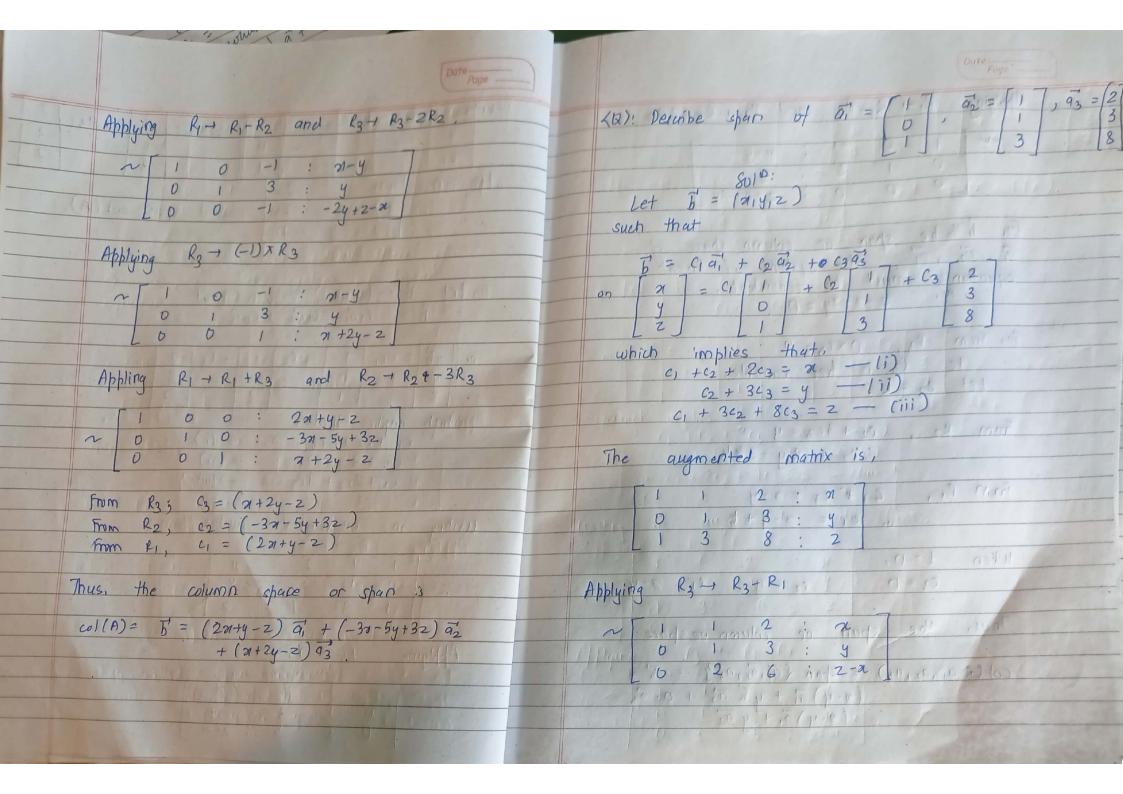
Column Space of a Matrix: Let Amon = vi vi vi where, vi, vi, ... vi etem The column space of matrix A is defined as the set of all linear combinations of column vectors of A. It is denoted as col(A) or CCA). collA) / CCA) = & CIVI+CZVZ+ ... CAVAB. where, c1, 12, ---, on are arbitrary constants It can also be defined as the subspace spanned by column vectors of A. col(A) or c(A) = span & Vi, V2, ... Vn 3 Note: For Ad = b is consistent ix, has one solution if

B is column space of A. LQ7: Find the column space of ATE 801P:





	200 11
0,1	Aug 2 0 0 00 and R3 + R3 - 222
	Applying R, +> R, -R2 and R3+1 R3+2R2
	n 0 -1: n-y
	3 : 410
	0 0 0 : 2-1-24
	For \overline{b} to be span or column space of $\overline{a_i}$, $\overline{a_2}$, $\overline{a_3}$ the system of linear equations must be consistent.
	For b to be span or want linear
	a, de as the system
	equations must be consisted
	2-1 2-1
	So, From R3, Oxc3=D
	So, From R ₃ , $0 \times c_3 = 0$ ie C ₃ is free variable. Let C ₃ = k.
	1e (3 15 1ee varia
	Let c3 - K.
	f_{mm} R2 . $e_2 + 3c_3 = y$
	From R2, C2 + 363 = 9
	Frm R1, C1 = 1 C3 = 21-4
	or c1/= 2-4+t
	when t=0,
	C3 = D
	Thus, the span or column respace
	col (4 a, 1 a2 1 a3) = epan { a1 1 a2 1 a3 3 = 5 =
	$\frac{(n-y)\vec{a_1} + y \vec{a_2} + 0 \cdot \vec{a_3}}{(n-y)\vec{a_1} + y \vec{a_2}}$
	$= (a-y)\overline{a_1} + y\overline{a_2}$
	The state of the s

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