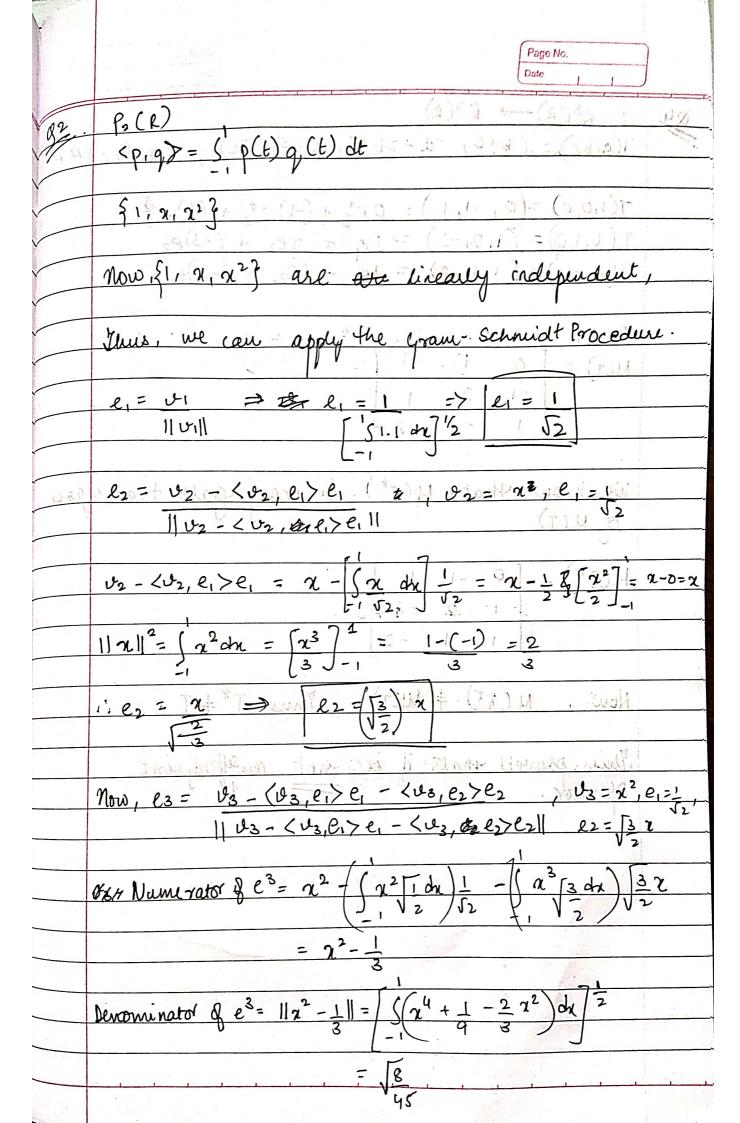
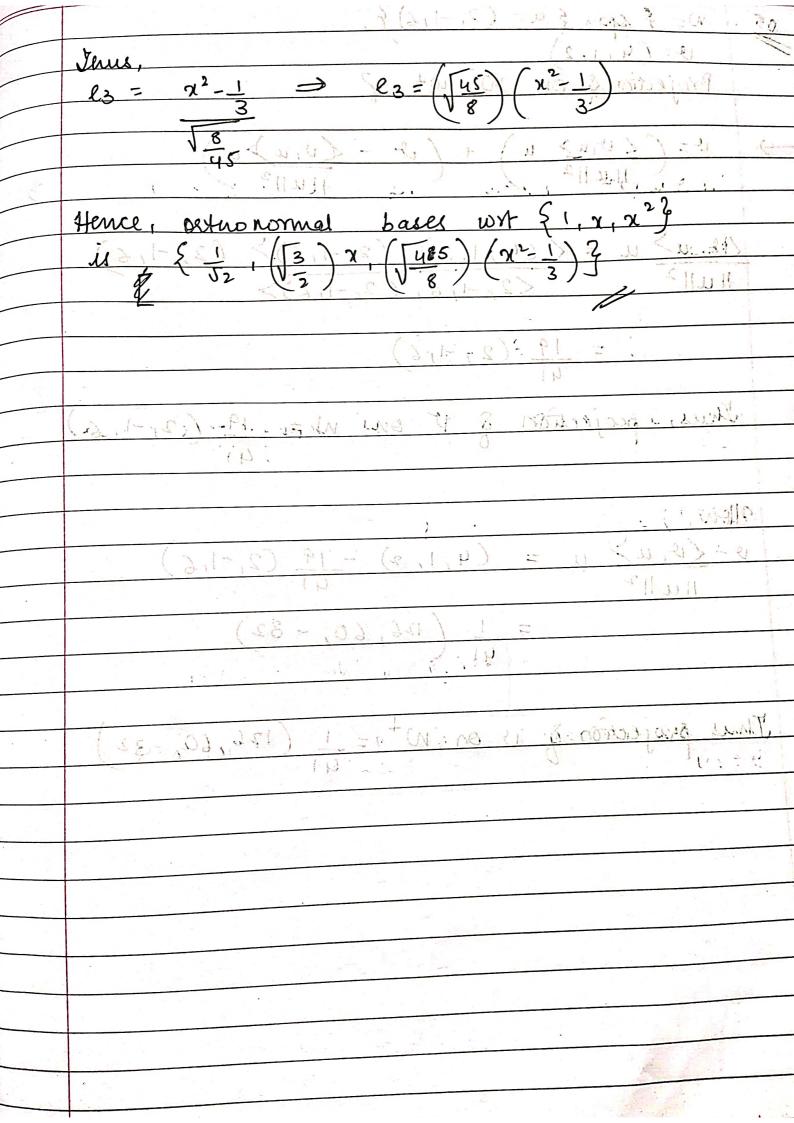
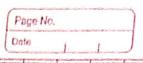
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\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	19MA 20059	Sell Sulk	L. ACK
		prile to l	1
	linear Algebra Test 3	0=114-41	J .
V		1-1-8= 11-411	1
V.1	11 011 = 117	<u> Saza</u>	
01	a hohalellogram equality	+ nationaxia	K
02.	orthonormal basis wot & 1, x, x2 }	и	
	11 ic - 412 = 2 (11 w) = 416112)	+ 110+211.	
	$\left\{\frac{1}{\sqrt{2}}, \left(\sqrt{\frac{3}{2}}\right)^{2}, \left(\sqrt{\frac{45}{3}}\right)^{2}, \left(\sqrt{\frac{3}{3}}\right)^{2}\right\}$		
	$\frac{3}{\sqrt{2}}$, $\frac{1}{\sqrt{2}}$, $\frac{3}{\sqrt{3}}$, $\frac{4}{\sqrt{3}}$, $\frac{4}{\sqrt{3}}$, $\frac{4}{\sqrt{3}}$, $\frac{3}{\sqrt{3}}$) + (以) 经	
		3.1	-
02	T*(7,y) = ((1-i) x+2y; 1-in-iy)	DE+36 ←	
100		21.49 6-	
	Tis normal = FALSE 211 = P	-81+3	
		5 from	
Ou.	Tis self-adjoint operator = No	D P + 8	
05.	Projection of & entow = 19 (2,	-1,6)	
1	41 11011	(5-22)	4
-	Projection of v ontow = 1 (126	,60,-02)	
	Projection of the onto vo	E YND WE	
22.08 PB = 1		and the second	
10, 11, 12			
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	LENGTH LINGS OF THE WORK OF THE WAR TH	
01	11ull = 3	
- 02.	$\ u+v\ =4$	
	11 u-v11=6	
مسل	11.01 = 8	
$\stackrel{-}{\longrightarrow}$	According to paralllogram equality	
	$\ u+v\ ^2 + \ u-v\ ^2 = 2(\ u\ ^2 + \ v\ ^2)$	
	$\Rightarrow (4)^{2} + (6)^{2} = 2(13)^{2} + U ^{2})$	
	=> 18+36 (= 2 (-9+11+112)) = (NI)	
	=> 8+18-9= 110112 = LOMMAN WITH	
	→ 8+9 = 111011 ² movem to talk to the	
	$\Rightarrow 17 = v ^2$	
) 17 = U	
	$ \rightarrow 17 = 1011 $ $ (A - 0) D D D D D D D D D $	
	1 Projection 2 1 marto with 1 = 11: (126, 30; 33x) 1.x	
	: Ans => 11011=1517 :-	
	1. SINS 9 11011	
	. 11.7.1	
44		







03

$$T: V_2(c) \rightarrow V_2(c)$$
, $T(1/0) = (1+i,2)$
 $T(0,1) = (i,i)$

T(0,i) = (i+i)(1,0) + (6)(0,i)(2) T(0,i) = (i)(1,0) + (i)(0,i)

 $M(T) = \{(1+i)\} (i)\}$

now, for to use know that M(T*) would be conjugate transpose of MCT).

Inus,

 $M(\vec{\tau}) = \begin{bmatrix} (1-i) & (2) \\ (-i) & (-i) \end{bmatrix}$

+*(/x/x) = (x/x) (x/x)(x)

 $T^*(x,y) = \begin{bmatrix} 1-i & 2 \\ -i & -i \end{bmatrix} \begin{bmatrix} 1 \end{bmatrix} = (1-i)x + 2y, (-i)x + (-i)y$

2+1+21 1+1+21

This calculation is not easy to be executed,
hence we use another condition, i.e TT*= T*T

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let us check TT*

$$M(TT^*) = M(T) M(T^*)$$

$$= \begin{bmatrix} 1+i & i \end{bmatrix} \begin{bmatrix} 1-i & 2 \\ -i & -i \end{bmatrix}$$

$$= \begin{bmatrix} 2+1 & 2(1+i)+1 \end{bmatrix} = \begin{bmatrix} 3 & 3+2i \end{bmatrix}$$

$$\begin{bmatrix} 2(1-i)+1 & 4+1 \end{bmatrix} \begin{bmatrix} 3-2i & 5 \end{bmatrix}$$

$$M(T^*T) = M(T^*) M(T)$$

$$= \begin{bmatrix} 1-i & 2 & 7 & 1+i & i \\ -i & -i & 2 & i \end{bmatrix}$$

$$= 2 + 24 \qquad i + 1 + 2i$$

$$-i + 1 - 2i \qquad 1 + 1$$

Thus, T*T + T*T

Thus, Tie not Normal

Tis NoT Normal

Page No. Date T: RS(R) -> R3(R) T(a,bx) = (b+c, -a+26+c, a-36-2c) MCT) -1 11:41 -3 know that M(7*) D MCI) 2 -3 MCTY) & MCT) Thus Now proved that T is not an effadjoint Operato

Page No. $W = \{ \text{ span } \{ u = (2, -1, 6) \} \},$ V = (4, 1, 2)Projection \{ \text{ on } W, w \dagger = \} \} $v = \left(\frac{\langle v_i u \rangle u}{||u||^2}\right) + \left(\frac{v}{||v||^2} - \frac{\langle v_i u \rangle u}{||u||^2}\right)$ (v, u) u = ((c4)1,2), (2,-1,6)> (2,-1,6) $=\frac{19}{11}(2,-1,6)$ Thus, peojection & v on W = 19 (2,-1,6) now, $\frac{v - \langle v, u \rangle}{\|u\|^2} u = (4,1,2) - \frac{19}{41} (2,-1,6)$ $=\frac{1}{41}\left(126,60,-32\right)$ Thus projection of v on w = 1 (126,60, -32