voblem Solvenge Drify whether the given transformation are Unear: T(No, NI) = (x0, 2x0+x1) Y(x0, XI) GR2 200 CXO, XI) (YO, Y) ER2 chandra's

Experiment Result T(\(\lambda(x_0, \times_1) + (y_0, y_1)\) T(\(\lambda(x_0, \times_1) + (y_0, y_1)\) T(\(\lambda(x_0, \times_1) + (y_0, y_1)\) = \(\lambda(x_0 + y_0) \times_1 \lambda(x_0 + y_0) + (\lambda(x_0 + y_1)\) = \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + 2 y_0 + y_1\) \(\lambda(x_0, \times_1) + T(y_0, y_1)\) \(\lambda(x_0, \times_2 + x_1) + (y_0, y_0) + y_1\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + (x_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + (x_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + (x_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + x_1) + T(y_0 + y_1)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_0 + y_0)\) \(\lambda(x_0 + y_0) \times_2 \lambda(x_	Name of Experim	of Experiment	
T(\(\lambda(x_0, \text{x}_1\)) + (\(\frac{1}{2}\), \(\frac{1}{2}\), \(\fra		C Experiment Result Page	No. 10
T(Axo + yo, Ax, +y) = (Axo + yo, 2(Axo + yo) + (Ax, +y)) = Axo + yo, 2(Axo + yo) + (Ax, +y)) = (Axo + yo, 2(Axo + x) + 2 yo + y) (onsider A. I(Xo, x) + I(yo, y) A (xo, 2xo + x) + (2yo + y) (Axo + yo, A(2xo + x) + (2yo + y)) - 0 From (D & we have T(A(xo, x) + (yo, y) = A T(xo, x) + 7(yo, y) By theorem 1 T is linear (b) To R3 -> 1R3 defined by T(xo, x, x) = (xo-x, 2x, 1) = (0,0,1) T(0,0,0) \$\pmoleon (0.0)\$ T(0,0,0) \$\pmoleon (0.0)\$ T(0,0,0) \$\pmoleon (0.0)\$ The the range space, yank, nullspace & nullifly for the linear transfer maken T: R3 -> 1R3 defined by T(e) = (1,-1,0) T(ex) = (2,0,1) T(ex) = (1,1)	1		
T(Axo + yo, Ax, +y) = (Axo + yo, 2(Axo + yo) + (Ax, +y)) = Axo + yo, 2(Axo + yo) + (Ax, +y)) = (Axo + yo, 2(Axo + x) + 2 yo + y) (onsider A. I(Xo, x) + I(yo, y) A (xo, 2xo + x) + (2yo + y) (Axo + yo, A(2xo + x) + (2yo + y)) - 0 From (D & we have T(A(xo, x) + (yo, y) = A T(xo, x) + 7(yo, y) By theorem 1 T is linear (b) To R3 -> 1R3 defined by T(xo, x, x) = (xo-x, 2x, 1) = (0,0,1) T(0,0,0) \$\pmoleon (0.0)\$ T(0,0,0) \$\pmoleon (0.0)\$ T(0,0,0) \$\pmoleon (0.0)\$ The the range space, yank, nullspace & nullifly for the linear transfer maken T: R3 -> 1R3 defined by T(e) = (1,-1,0) T(ex) = (2,0,1) T(ex) = (1,1)	-	T(() x (yo, y1) + (yo, y1)	
= (Axo + yo, 2 (Axo + yo) + (Ax, +y1)) = Axo + yo, 2 (Axo + yo) + (Ax, +y1) = (Axo + yo, 2 (Axo + x1) + 2 yo + y1) (Axo + yo, 2 (2xo + x1) + (2yo + y1) (Axo + yo, 2 (2xo + x1) + (2yo +y1)) - 0 Yom (D & D we howe T(A(xo,x) + (yo,y1) = A T(xo,x) + 7 (yo,y1) By theorem 1 T is linear (B To R3 -> 1R3 defined by T(xo, x1, x1) = (xo-x1, 2x, 1) = (0,0,1) T(0,0,0) = (0.01) - By theorem 2, T is not linear T(0,0,0) = (0.01) - By theorem 2, T is not linear The linear range space, yank, nullspace & nullify for the linear lyonger maken T: R3 -> 1R3 defined by T(e) = (1-1,0) T(ex) = (2,0,1) T(ex) = (1,1)	-	((1/20,1/21) + (1/2)	
(onsider \[\langle \tau(\text{x}, \rangle \text{y}, \rangle \tex	-	1010 + 40 12	
(onsider \[\langle \tau(\text{x}, \rangle \text{y}, \rangle \tex		= 1x0+40 + (1x,+41)	
(onsider \[\lambda \tau(\text{\constraint}) + \tau(\text{\constraint})		120+30; X(2x0+x1) + 2 y0+41) -0	
λ. T(xo, x ₁) + T(y ₀ , y ₁) λ (xo, 2xo+x ₁) + (y ₀ , 2y ₀ + y ₁) (λ xo + y ₀ , λ(2xo + x ₁) + (2y ₀ + y ₁)) = Θ From (D & Θ we howe T(λ(xox ₁) + (y ₀ , y ₁) = λ T(xo, x ₁) + T(g ₀ , y ₁) By theorem 1 T is lenear (E) To IR ³ → IR ³ defined by T(xo, x ₁ , x ₂) = (αo-x ₁ , 2x ₂ , 1) sla, there T(O, 0, 0) = (0.0, 20, 1) = (0, 0, 1) T(0, 0, 0) ≠ (0.0, 1) T(0, 0, 0) ≠ (0.0, 1) - By theorem 2, T is not lenear The lenear transformation T: IR ³ → IR ³ defined by T(e) = (1, -1, 0) T(c ₁) = (2, 0, 1) T(e ₂) = (y ₁ , y ₂)			
(1 × 0 + y 0 , λ(2 × 0 + x 1) + (2 y 0 + y 1)) = 6 Yom (D & D we howe T(λ(x 0 x 1) + (2 y 0 + y 1)) = 6 T(λ(x 0 x 1) + T(y 0 y 1) = λ T(x 0 x 1) + T(y 0 y 1) By theorem 1 T is lenear Slave T(x 0 x 1, x 0) = (α 0 - x 1, 2 x 0 1) Slave T(0,0,0) = (0,0,1) T(0,0,0) ≠ (0,0,1) T(0,0,0) ≠ (0,0,1) By theorem 2, T is not lenear The lenear lyamifor matter T is R3 ¬ R3 defined by T(x 1) = (1,-1,0) T(x 1) = (2,0,1) T(x 1) = (1,1,1) T(x 1) = (1,-1,0) T(x 1) = (1,1,1) T(x 1) = (1,1,1) T(x 1) = (1,-1,0) T(x 1) = (1,1,1) T(x 1) =			
Jeon () & () we have T(x(xo,x)) + (yo,y) = x T(xo,x) + T(go,y) By theorem 1 Tip Isnear (5) To R3 -> 1R3 defined by T(xo,x,xo) = (xo-x, 2xo,1) sla, there T(0,0,0) = (0-0, 20,1) = (0,0,1) T(0,0,0) \$\pm\$ (e.0,1) By theorem 2, Time not Isnear The Isnear Ixamifor matter To R3 -> 1R3 defined by T(e) = (1,-1,0) T(e) = (2,0,1) T(e) = (1,1)		x (x0, 2x , x) + (1)	
T(x(xox) + (yo y) = x T(xox) + T(yo y) By theorem 1 Tis lenear To ToR3 -> IR3 defened by T(xo x, x) = (xo-x, 2x, 1) Shy there T(0,0,0) = (0.0, 20,1) = (0,0,1) T(0,0,0) \$\pm\$ (0.0,1) By theorem 2, This not lenear The lenear transfer matter T: IR3 -> IR3 defened by T(xo) = (1,-1,0) T(xo) = (2,0,1) T(xo) = (1,1)		() x0 + 40 , 2 (2x + 7) + (0 (2) 0	
T(x(xo,xi) + (yo,yi) = \(\) T(xo,xi) + \(\) T(ga,yi) By theorem 1 \(\) In \(\) In \(\) \\ \(\) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		rom () & () 100 towe	
(5) To TR3 - 1R3 defend by T(xo, x, x)=(xo-x, 2x, 1) Show there T(0,0,0) = (0.0, 20,1) = (0,0,1) -1. By theorem 2, Tis not benear The range space, rank nullspace & nullshy for the benear from for maken To R3 -> R3 defened by T(e) = (11.0) T(e) = (2.0,1) T(e) = (1.11)			
(F) To TR3 - IR3 defened by T(xo, x, x, x) = (xo-x, 2x, 1) sla, Here T(0,0,0) = (0.0, 20,1) = (0,0,1) -1. By theorem 2, Time not benear 3) Frad the range space, rank, nullspace & nullifly for the lenear framefor matter To R3 -> TR3 defened by T(e) = (1-1,0) T(ex) = (2,0,1) T(ex) = (1,11)		By theorem 1 T: leven	
Shy Here $T(0,0,0) = (0.0,1)$ $= (0.0,1)$ $T(0,0,0) \neq (0.0,1)$ $= $		J. The linear	
Shy Here $T(0,0,0) = (0.0,1)$ $= (0.0,1)$ $T(0,0,0) \neq (0.0,1)$ $= $	65	T:1R3 -> 1R3 delened by T(xo x, x)= (xo-x, 2x	, 1)
T(0,0,0) \$\(\frac{1}{0}\) \\ \tag{Find the range space, rank, nullspace & nullity for the lenear framefor matter \[\tag{T(\varepsilon\)} = \(\frac{1}{2}\) \\ \tag{T(\varepsilon\)} = \(\frac{1}{2}	cla		,,
T(0,0,0) \$\(\pm\) (0,0,1) .*By theorem 2, T.is not lenear 3) Frad the range space, rank nullspace & nullsty for the lenear framefor matter T: R3 \rightarrow R3 defined by T(e) = (1,-1,0) \(T(e_1) = (2,0,1) \) T(e_3) = (1,11)			
3) Frad the range space, rank, nullspace & nullshy for the lenear framefor matter T: R3 -> R3 defined by T(e) = (1-1,0) T(ex) = (2,0,1) T(ex) = (1,11)			
3) Find the range space, rank, nullspace & nullshy for the lenear fromformation T: R3 -> R3 defined by T(e) = (1-1,0) T(e2) = (2,0,1) T(e3) = (1,11)			
The lenear transfer matter $T: \mathbb{R}^3 \longrightarrow \mathbb{R}^3$ defined by $T(e_1) = (1,-1,0)$ $T(e_2) = (2,0,1)$ $T(e_3) = (1,1,1)$			
The lenear transfer matter $T: \mathbb{R}^3 \longrightarrow \mathbb{R}^3$ defined by $T(e_1) = (1,-1,0)$ $T(e_2) = (2,0,1)$ $T(e_3) = (1,1,1)$	2)	Frad the mance some vank nullspace & nulls	y Jox
$T: \mathbb{R}^3 \longrightarrow \mathbb{R}^3$ defined by $T(e_1) = (1,-1,0) \qquad T(e_2) = (2,0,1) \qquad T(e_3) = (1,1,1)$	2	the lease bouler maken	0
$T(e) = (1-1,0)$ $T(e_2) = (2,0,1)$ $T(e_3) = (1,1,1)$		T. 03 DB3 delined by	
		$T(e) = (1 - 1 - 0)$ $T(e_2) = (2,0,1)$	T(e3) = (1,1,1)
	-	(where extinue) e2=(0,1,0) e3=(0,0,1)	
and hence very Rank-nullify theorem absorbite a	-	(where (it), 0,0) (2 - (1)) Rock millel a theorem	alsowite a
and hence very y want - many y		and hence very q hant- many	
chandra's			handra's



