	าลันกาท, 22/12/2022			
(2019)				
T.				
ere ik e Millerijer i Help interstranske filozofie	X2 = - X1 - X1 - X2			
nucosana en entre entre entre	511 511 14 14 14 14 14 14 14 14 14 14 14 14 1			
Ø1	X ₂ =0			
athair him an i mhalladh ag daill a	$X_{2e} = 0$ $X_{$			
ti nati stranova nakona nati napole	The same of the sa			
alpunto no recipialmente car Mangris	₹2: Y= Y1 = X } , Y1 = Y2 } = 1 μοναδ. 6.1.			
	$\exists z: y = \begin{cases} y_1 \\ y_2 \end{cases} = \begin{cases} x \\ \dot{x} \end{cases}, \dot{y_1} = y_2 \begin{cases} \frac{2.1}{2} \\ \frac{1}{2} \end{cases} y_2 = 0 \begin{cases} \frac{1}{2} & \text{if } y_2 = 0 \\ \frac{1}{2} & \text{if } y_2 = 0 \end{cases} (0,0)$			
	5 (1881) Companies (440) r			
8)	$\exists i: \dot{X} = f(x), f(x) = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$			
	7X1-X1-X1-X1-X1-X1-X1-X1-X1-X1-X1-X1-X1-X			
	$A(0,0) = \partial f \qquad \qquad (0) \times (0) \times (0) \times (0) \times (0)$			
	3x (0,0) x (0,0) x (0,0)			
	$\begin{bmatrix} \frac{\partial f_1}{\partial f_2} & \frac{\partial f_2}{\partial f_2} \end{bmatrix} \begin{bmatrix} 0 & 1 \end{bmatrix}$			
	$\partial f = \begin{vmatrix} \partial x_1 & \partial x_2 \\ \partial f_2 & \partial f_2 \end{vmatrix} = \begin{bmatrix} -1-2x_1 - 1 \end{bmatrix}$			
	9X1 9X7 9X8			
	$A_{(0,0)} = \begin{bmatrix} 0 & 1 \end{bmatrix}, Rc(\lambda_i(A_{(0,0)})) < 0, i=1,2$			
	-1 -1 # 1º Dewpnya Lyapunov			
	(0,0) ฉอบนาพาเหล่ ยบอาฉบิยัง			
	$A_{(-1,0)} = \begin{bmatrix} 0 & 1 \end{bmatrix}$			
	1 -1			
	det(λI - A(-1,0)) = λ2+λ,-1			
-	Fiμε Rc(λi(A1-1,01)) >0 = (-1,0) α6ταθές			
	지어 그들이 아이는 아이는 그는 그 그는 사람들이 아이들이 그렇게 되었다면 다 살을 받다.			

	22: $f(y) = \begin{bmatrix} y_2 \\ -y_1^3 - y_2 \end{bmatrix}$ $\frac{\partial f}{\partial y} \begin{bmatrix} x_1 \\ y_2 \\ y_3 \end{bmatrix}$ $\frac{\partial f}{\partial y} \begin{bmatrix} x_1 \\ y_3 \\ y_4 \end{bmatrix}$ $\frac{\partial f}{\partial y} \begin{bmatrix} x_1 \\ y_4 \end{bmatrix}$ $\frac{\partial f}{\partial y} \begin{bmatrix} x_1 \\ y_3 \end{bmatrix}$ $\frac{\partial f}{\partial y} \begin{bmatrix} x_1 \\ y_4 \end{bmatrix}$ $\frac{\partial f}{\partial$
3	$V = x_1^4 + x_1^2 + 2x_1x_1 + 2x_2^2 = x_1^4 + (x_1 + x_2)^2 + x_2^2$ $b \in \text{Trud} \text{ opicipism}$ $V(x_1, x_2) > 0 \forall (x_1, x_2) \in \mathbb{R}^2 \setminus \{(0, 0)\}$ $\dot{V} = \frac{\partial V}{\partial Y_1} + \frac{\partial V}{\partial Y_2} + \frac{\partial V}{\partial Y_2}$

χ)	
3	$ \dot{V} = \frac{\partial V}{\partial V_1} + \frac{\partial V}{\partial V_2} \dot{V}_1 = (4V_1^3 + 2V_1 + 2V_2)V_1 + (2V_1 + 4V_2)(-V_1^3 - V_2) $ $ = (4V_1^3 + 2V_1 + 2V_2)V_2 - 2V_1^4 - 2V_1^4 - 4V_1^3V_2 - 4V_2^2 $ $ = -2V_1^4 - 2V_2^3 + 2V_1 + 2V_2 + 2V_1^4 - 2V_1^4 - 4V_1^3 + 2V_2 - 4V_2^2 $ $ = -2V_1^4 - 2V_2^3 + 2V_1 + 2V_2 + 2V_1^4 - 2V_1^4 + 4V_2 + 4V_2^2 $ $ = -2V_1^4 - 2V_2^3 + 2V_1 + 2V_2 + 2V_1^4 - 2V_1^4 + 4V_2 + 4V_2^2 $ $ = -2V_1^4 - 2V_2^3 + 2V_1 + 2V_2 + 2V_1^4 - 2V_1^4 + 4V_2 + 4V_2^2 $ $ = -2V_1^4 - 2V_2^3 + 2V_1 + 2V_2 + 2V_2^4 + 2V_2^4 + 2V_2^4 $ $ = -2V_1^4 - 2V_1^4 + 2V_2^4 + 2V_1^4 + 2V_2^4 $ $ = -2V_1^4 - 2V_1^4 + 2V_2^4 + 2V_2^4 $ $ = -2V_1^4 - 2V_1^4 + 2V_1^4 $ $ = -2V_1^4 - 2V_1^4 $ $ = -2V$
	= $(4x^3 + 2y^1 + 2y^2) y_2 - 2y^4 - 2y^4y_2 - 4y^2y_2 - 4y^2$ = $-2y^4 - 2y^2 < 0 + (y_1, y_2) \in \mathbb{R}^2 \setminus \{0, 0\}$ (0,0) ohlud acupatudi euctavės $\Delta \dot{x} = A\Delta x + bu$ $b = \{0\}$, $c = \{1, 0\}$, $\Delta x = x - xe = \{x_1 + 1\}$
	$= 2y_1^4 - 2y_2^4 < 0 \forall (y_1, y_2) \in \mathbb{R}^2 \setminus \{0, 0\}$ $(0,0) \text{odiva acountwive custables}$ $\Delta \dot{x} = A\Delta x + bu b = \{0\}, c = \{1, 0\}, \Delta x = x - xe = \{x_1 + 1\}$
	(0,0) ohua acupintwitua cuctavės $\Delta \dot{x} = A\Delta x + bu \qquad b = \begin{bmatrix} 0 \\ 1 \end{bmatrix}, c = \begin{bmatrix} 1 & 0 \\ 1 \end{bmatrix}, \Delta x = x - xe = \begin{bmatrix} x_1 + 1 \\ 1 \end{bmatrix}$
	$\Delta \dot{x} = A\Delta x + bu$ $b = \begin{bmatrix} 0 \end{bmatrix}$, $c = \begin{bmatrix} 1 & 0 \end{bmatrix}$, $\Delta x = x - xe = \begin{bmatrix} x_i + 1 \end{bmatrix}$
	$\Delta \dot{x} = A\Delta x + bu$ $b = \begin{bmatrix} 0 \end{bmatrix}$, $c = \begin{bmatrix} 1 & 0 \end{bmatrix}$, $\Delta x = x - xe = \begin{bmatrix} x_i + 1 \end{bmatrix}$
,	$\begin{cases} \dot{x}_1 = x_0 \\ A_{(-1,0)} = \begin{cases} 0 & 1 \end{cases} A_{(0,0)} = \begin{cases} 0 & 1 \end{cases}$
	$ \dot{x}_2 = -X_1 - X_1^2 - X_2 + U$
	Y: X1-(-1) = X1+1
	$\Delta \dot{x} = \begin{bmatrix} x_2 \\ \end{bmatrix} = \begin{bmatrix} 0 & 1 \end{bmatrix} \begin{bmatrix} \Delta x_1 \\ \end{bmatrix} + \begin{bmatrix} 0 \\ \end{bmatrix} \underbrace{u} + \begin{bmatrix} 0 \\ \end{bmatrix}$
•	$-x_1 \Delta x_1 - x_2 - u$ $1 - 1 \Delta x_2$ $1 - 1 \Delta x_1^2$
	$\det(\lambda \mathbf{I} - A_{(0,0)}) = \lambda^2 + \lambda + 1$
	[= (b Ab] = [0 1], det(e)==1 ≠0 ελέχ]ιμο
	$u = -2\Delta x$,
	u- •3.7
•	
9	

X(K+T) = +(x(t))
6.1.	물으로 그들은 그는 이 그는 물로 없을만 하는데 그는 그는 물로 가장을 보는 그를 가장 하는 그들은 아이를 하는데 살아 살아 살아 살아 살아 했다.
xe=f(xe	
	د)-Xc
Δx(t+1)=	$\int (x(t)) - xe = \int (x_t) - \int (x_e) = \frac{\partial f}{\partial x} \Big _{x=x_e} \Delta x(t) + O(\Delta x(t) ^2)$
Δx(t+1) =	
A = 0f	x=Xc
9×	x=xe
	Lung - 18 AV 2 - Man C - T. Plans - Sur Live - Sulter South - South
1º Đewpnha	Lyapunov (20x)
	x(t)) E6TW A = Of
	∂x x=xe
AV Xe 6.1.	$\delta n\lambda$. $xe = f(xe)$,
	(1 + VI τότε το χε είναι ποπιμά αδυμητωτιμά ευστουδ
	1.w. λ:(A) >1 τότε το xe είναι ασταθές
	e come de la come de l
2º Acidonia	Lyapunov (EDX)
	x(t) 5 xe 1.5.
- C:VE vA	
	$\frac{1}{1} - V(x(t)) < 0 \forall x(t) \in D \setminus \{xe\}$
	είναι ασύμητωτιμά ευβταθές.
TOTE TO Xe	Ervar douplitte lind cooldes.
	- 111111111111111111111111111111111111
AND THE STATE OF T	

7	$x(k+1) = \alpha x(k) + x^{4}(k)$, $\alpha \in \mathbb{R}$			
7	α) σ.ι.			
	β) V(x) = x4 για ποια x(ο),α, x(ε) - ο μασώς κ-∞			
	pr vert = x gia noise xioi, a , xiii = 0 uadws e==			
5				
S	a) $x_c = \alpha x_c + x_c^4 \Rightarrow (1-\alpha) x_c = x_c^4$			
	αν α = 1 τότε χε= Ο μοναδιμό 6.L.			
S	$av a \neq 1$, $1 - a = xe^3 = 1$, $xe = (1 - \alpha)^{1/3}$			
<u> </u>	Xe=0 0			
>	×+1			
<u> </u>	$\alpha > 1 - (\alpha - 1)^{4/3} = 0$			
	a+1			
<u></u>	act 0 (1-x)1/3			
,	ρ (ε) - (c.s (c.s.			
•	8x1,			
,	• ae(-1,1) • ae(-0,-1) ees 1 + ees 1 + ees 1 + ees 1			
,	0>1 n 0<-1:067006) \$2620+2825.8+228.8+20.1 = (2)7			
	$\epsilon v \epsilon n i \delta \epsilon i \alpha : \alpha \epsilon (-1,1)$			
	$Q=1: x(k+1)=x(k)+x^{4}(x) \text{anoppingetal}$			
	$\alpha = -1$: $x(t+1) = -x(t) + x^4(t) = -(1-x^3(t))x(t)$ anoppinteral			
	$\chi(0) = -\delta$			
	$x(1) = -(1+\delta^3)\delta$			
	$x(3) = -\left(1+2_3\left(1+2_3\right)_3\right)\left(1+2_3\right)_2$			
	$\Delta x(t) = x(t+1) - \chi(t) = -2x(t) + x^4(t)$			
	B) $V(x(k+1)) - V(x(k)) = (\alpha x(k) + x^4(k))^4 - x^4(k) = 0$			
	$= \left[\left(\Omega + x^3(k) \right)^4 - 1 \right] x^4(k) < 0$			
	Oταν -1 < α +x5(t) < 1 = -1-α < x3(t) < 1-α =			
	=) - (1+x) 1/3 <x(t) (1+x)="" 1="" 3<="" <="" td=""></x(t)>			
	$-(1-\alpha)^{4/3}$ 0 $(1-\alpha)^{4/3}$			
	Services of Services Lettern Little Company of Services Company of Services			
	그는 이번 가게 하는 것이 되었다. 그는 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은 사람들은			