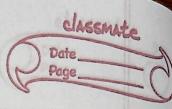
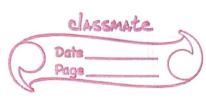


	A Propolinear Ophonicalisa.
	WEEK-4 - OPTIMIZATION:
	The transfer of the second sec
	1 Chronestrained case:
1	Components of an optimization problem:
	Objective function
	a Decision - variables (Ox)
	3 Constraints scaling or Hospe Sage
	A CONTRACTOR OF THE PROPERTY O
9	Types of optimization problems:
	19 1 The second of the second
	O linear programming problem
	(2) Non lineax programming problem
	(2) Non-linear programming problem • Convex vs Non convex • Convex vs Non convex
	3 Integer programming problem (linear and non linear)
	(3) Mixed integer linear programming problem
	D'Mixed integer non-linear programming problem.
	e) mixed integer non-wide projection
	o= (x) + inonunos gracasos de (x) = 0
	DE (AT) J: VOLIDOO POUDINANO AND



#	Non-Linear Optimization:					
		WEEK-4 - OPTIMIZATION				
0	Un constrained case:					
	-	o Components of an potimization problem:				
(i)	Univariate:					
		decision variable noisone ovitorito				
	n	nin (f(x))				
		rer objective function distriction				
	ga)	Tanks in Parlyming ron problems	-			
		minimizer.				
	Cal	MINIMA DECARROLLAR DESPERA				
		1 Very linear Jamenning Soblems				
		Sound Sylves of global minimum				
A	1 40					
33 13	a Integer pregimning problem linear and i					
	Mixed integer linear programming problem					
100 M	-16	(5) Mixed intiger non-linear programmi	_			
	* Second order sufficiency condition: f'(x*) =0 * Second order sufficiency condition: f''(x*) >0					
	* Second order sufficiency condition: f"(x*) >0					
			_			

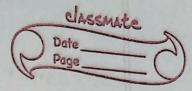


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	2	y gradient
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		* in it is the condition
(e) 17-10	(* X-)	
<u> </u>	74	Vaf(K*) > c
	JNn	
		moissoft bis Hessian
72f =	1 2 F	22 Eigen values 32 f
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	02f	9-1-
		2×n
	DXn XX,	



A gradient of a function at a point is orthogonal * Gradient points in the direction of greatest increase of the function. A-ve gradient point in the dirn of greatest decrease of the function * Hersian is a symmetric matrix * Necessary condition for 7 to be the minimines: of (x=)=0 * Sufficient condition: $(\bar{\chi} - \chi^{\frac{1}{4}})^T \nabla^2 f(\bar{\chi}) (\bar{\chi} - \bar{\chi})$ 02f(x1) >0 find Hersian And eigen values if all the the hersian 70

, X8 n x6



Unconstrained multivariate optimization - Descent direction and move ment 2 Iterative SK storting slep point length. search -) Steepest descent and optimum step size: Minimize f (x1, x2, ... xn) = f(x) in higher dimenson, (more than one ·Steepest descent: ·at iteration K starting positing is xx · Search dir n sk: Negative gradient of f(n) = - \forall f

*New point is nk+1 = xk+ \arksk = is the value of a for which ion $f(x^{(k+1)}) = f(x) = is a minimum$