

		/m ::		1		
WEEK	<del>(-5</del>	-	Op	timi	Za	ion

Multivariate optimization with constraints.

eg. Min 2x,2 + 4x,2 f(n.)

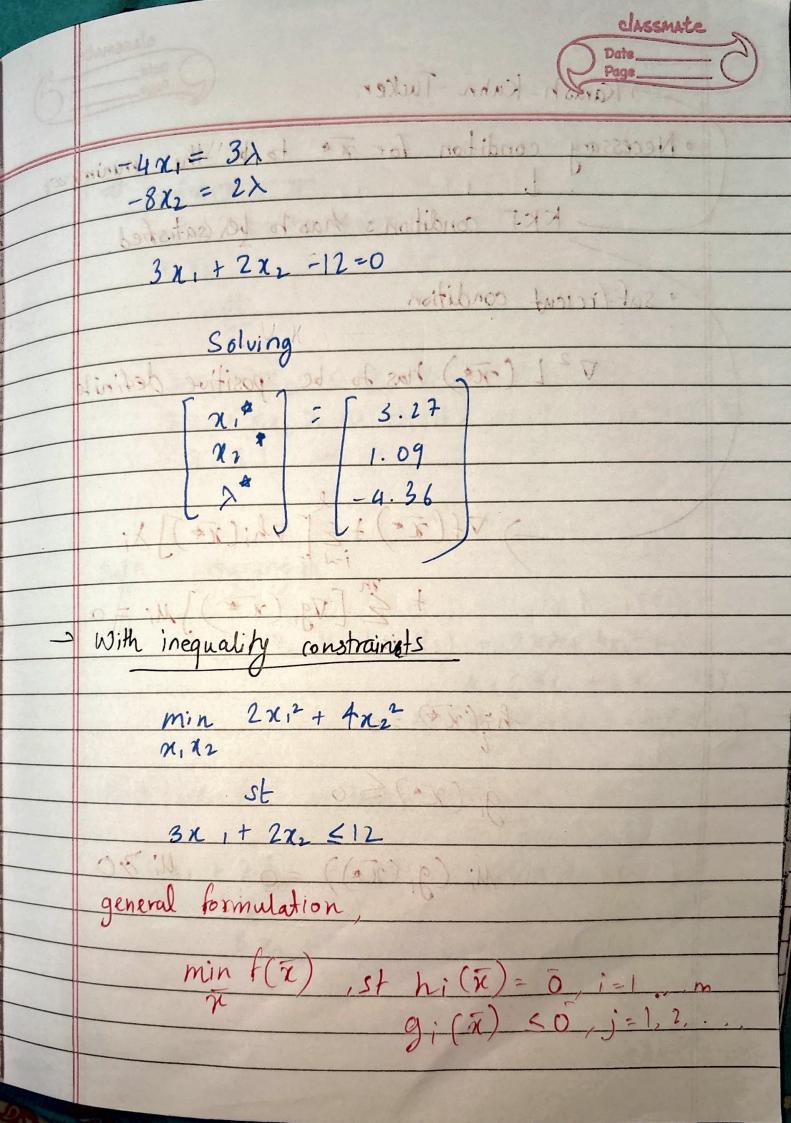
3x, + 2x2 = 12 h(N)

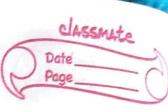
- Vf(2\*) = 2\* Vh(2\*) ) 226 + 820017 6

in higher dimenson, (more than one equal)

. | - Vf( 70) = 2, [Vh; (x\*) search dies of Marting posind is ack

gradient lies in the space spanned by the mormal of the gradients f(xxxx) = f(x) = is a minimum



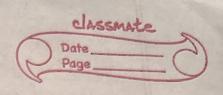


1.	1	Kuhr	-16	cker.
KAVI	wh-	Kann	LIV	CAL.

-	Karush-Kuhn-Tucker.
	· Necessary condition for to be the minimize,
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1	KKI conditions has to be satisfied.
100000000000000000000000000000000000000	0+51+1X5+1X6
	· sufficient condition
/	Solving
	√2 L (xx) has to be positive définite.
	fs. &   \$ 18
_	PO.1 \
\	18,86
ter etc	) \f(\(\frac{1}{2}\) \rightarrow \frac{1}{2} \left[\frac{1}{2}\]\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	+ = [Vg; (xx)] M; = 0
Park	History Wileson Hits
-	the state of the s
-	hora continue
_	01, 1/2
NACA	g: (x) = 0
	0

M; (g; (Tr)) Mi 70

nin F(x



> Trace of Problems

(6) ARREAS BASILMONDIANS

eg:  $\pm (x_1, x_2, x_3)$   $\pm (x_1, x_2, x_3)$ 

st

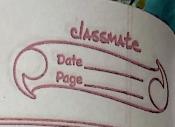
 $3x_1 + 2x_2 \le 12 \Rightarrow (a)$   $2x_1 + 5x_2 > 10 \Rightarrow (b)$ 

Solh Langrangian

 $L(x_1, x_2, M, M_2, M_3) = 2x_1^2 + 4x_2^2 + M_1(3x_1 + 2x_2 - 12) + M_2(10-2x_1-5x_2) + M_3(x_1-1)$ 

First Gorder KKT conditions

4x, +872 + 3M, -2 M2 + M3 =0 & x2 +2M, -5 M2 =0



M, (32, +272 -12)=0 M2 (10-2x, - 5x2)=0 (15,00) M3 (x3-1)=0x4 + 5,000 min M: 70

11 3x1+2x2 612 3 A

Langrangian

INTRO to DATA SCIENCE: OF SCIENCE

=> Types of Problems:

1 Classification problems

@ Function Sapproximation ..... W. ( 34, + Lxs

1 My (10-22, 12-0) 1 Mb (1)

Steps in Data Imputation

- 1) Problem Definition
- 6) Problem Characterization
- 3) Solution Conceptualization
- 4 Method Identification
- 6) Actualization
- 6) Assers assumptions