	MSOR	Y Ping TSENG NO.
		yt2690 yiping. to columbia and a :
1. X:=	1000 barrels of oil.	and the same of the control products
Χz :=	1000 barrels of aviation	ion fuel,
√3 :=	1000 barrels of heater	170 gu
X4:=	.000 barrels of proce	used aviation fuel.
χ ₅ :=	1000 barrels 27 proc	essed herting oil.
	tes	brofit -
		(a) + 40 (X3-X5) + (30X4 + 90X5
s.t.	Y. ≤ >0	we can only buy 20,000 barrels a day
	0.5 X, - X2 20	loop barrels of oil yields too aviation for
	0.5K1 - K3 >0	" too heating oil
	60 x4 + 45 x5 5 4	80 only have 8 hr a day
	K2 - K4 20	make sure cracked aviation fuel originale f
Lex E + ox	X3 - X5 20	The state of the s
407575-01	X1, X2, X3, X4, X5	20
> by	gurobi	四十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二
the	optimal obj : 160	o daily profee
brausk	where K(= >0	(1000 barrels of oil)
	K>= (0	(1000 barrels 89 autation fuel).
	x3 = 10	(1000 barrels of heating oil)
	x4 = 8	(1000 barrels of processed aviation fuel)
March 1	K5 = 0	(1000 burrels of processed heating oil).
1		X 100
4		a Value of Salar Salar
N M	120	De la serie
1 1 1 5	- 10	
		The state of the s
	4 (T 4/ 1) ()	

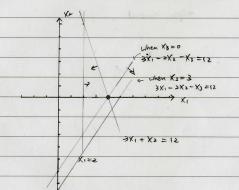
	No:	
	Date	1 / 1 / 1
V. XI := Times of Process 1		
K. := Timps of process 2		
K; == hiring hours.	4-1-1	
Way I		
supply: >X, + 5x>		
domand = >00 x3 + 1000.		
700.13		
labor wed: X, + >Xe		
Chem used: >K, +3X2		
Meet - 1/1 - ME		
		haring G
max: 5(3×1+5×x) - 3(×1+>×x) - >(>	1X, +1X2)	- (00 X
5,t1 X1 + >X2 & 20000		
>K, + 3K2 ->00K) = (000		
X. X. X. 20		
) by gurobi	W	
X1: (6000 tins) of process 1		
Xx: 5000 times of process 2		
Xo: 270 Wring hours.	* - 7	
obj value = 118000.		
4.		
	- 14. ·	

7. min z= 3x, - 3x2

s.t. $3x_1 + x_2 \leq 12$

X1 - 2X2 - X3 = 12 3 3X1 - 2X2 2 12 X1 2 2 3 4X1 - 2X2 2 12

X1, X2, X3 20



by above graph, the only optimal solution is

Uhen Ki = 4 , Xz = Kz = 0

where 2 is the minimum value 12.

there isn't fartible region

						Date : :
Xc,1 :=	= crude	oil used	d in m	ethod 1		
Xe,2 :=		(I		١		
Xe,3 :=		u		3		
X9,6 :=		rels A	6 9,	nde gas.		
X9.8 ::		0	8	(1		
		(1	(0	u		
Xg.10 ::				8-2-3	1	
X4.8 :		11	8	rade heati	~J 0(I	
X 6, 10 :		"	(0			
						to grade 8
X 8-310	=	()		8	.11	1, (
max sell	.4 Xc.1			5(Xh,c 6Xe,3 +	X6-18 + 1	
cot: 3	4 Kc,1	+ 3 (c,2	+ 2 .1	(Xe,3 +	X6-18 + 1	
max sell	4 Kerl 1 - cost X3,6 +	+ 3 xc,2	+ ×9,10	< xe, 3 + < > > > > 000	X6-18 + 1	
max sell	.4 Kc,1 1 - cost XJ,6 +	+ 3 Kc,2 - Kg,8 -	+ ×9,10		X648 + 1	.5 X & >10
max sell s.t.	1- cost XJ,6 + Xh,6 -	+ 3 xc,2 - xg,8 + xh,8 + 8 x3,8	+ 2.11 + Kg,10 + Kn10 + 10 Kg.		X6+8 + 1	.5 X8 ×10.
max sell s.t.	1-cost XJ,6 + Xh,6 - 6X5,6 -	+ 3 Kc,2 - Kg,8 - + Xh,8 + 8 K3,8 + 8 Kh,8	+ X9,10 + Xn,10 + 10 X9,	= 500 = 600 10 = 9(X3.6 + X3.6 + X	15 × 6 × 10.
max sell s.t.	1-cost XJ.6 + Xu.6 - 6×5,6 - 6×7,6 -	+ 3 Kc,2 - Kg,8 + Xh,8 + 8 Kg,8 + 8 Kh,8 + 8 Kh,8	+ ×9,10 + ×n,10 + 10×9, + 10×4,	$(x_{c,3} + x_{c,3} + x_{$	X3.6 + X9.6 (X6.6 + X	12 + X51.0) 12 + X51.0) + X6-18
max sell s.t.	1- cost XJ.6 + Xh.6 - 6X5,6 - 6Xh.6 0.3Xc,1	+ 3 Xc,2 + Xh,8 + 8 Xh,8 + 8 Xh,8 + 0,2 Xc,	+ ×9,10 + ×n,10 + 10×9, + 10×4, + 0,3×	= 2000 $= 600$ $= 600$ $= 7$	X3.6 + K3.6 + X4.6 + X4.6 + X4.6 + X4.6 + X4.6	1.5 × 5 × 10) 1.6 × × × 100) + × 6 × 8 + × 8 × 0 - ×
max sell s.t.	1- cost XJ.6 + Xh.6 - 6X5,6 - 6Xh.6 0.3Xc,1	+ 3 Xc,2 + Xh,8 + 8 Xh,8 + 8 Xh,8 + 0,2 Xc,	+ ×9,10 + ×n,10 + 10×9, + 10×4, + 0,3×	= 2000 $= 600$ $= 600$ $= 7$	X3.6 + K3.6 + X4.6 + X4.6 + X4.6 + X4.6 + X4.6	12 + X51.0) 12 + X51.0) + X6-18
max sell s.t.	1- cost X3.6 + X4.6 - 6×5,6 - 6×5,6 - 6×5,6 - 0.3×6,1 0.5×6,1	+ 3 Xc,2 + Xh,8 + 8 Xh,8 + 8 Xh,8 + 0,2 Xc,	+ ×9,10 + ×n,10 + 10×9, + 10×4, + 0,3×	= 2000 $= 600$ $= 600$ $= 7$	X3.6 + K3.6 + X4.6 + X4.6 + X4.6 + X4.6 + X4.6	1.5 × 5 × 10) 1.6 × × × 100) + × 6 × 8 + × 8 × 0 - ×
max sell s.t.	1-cost X3.6 + X4.6 - 6X5.6 - 6X6.6 0.3X6.1 0.5X6.1 0.6X6.1	+ 3 Xc,2 - Xg,8 + Xh,8 + 8 Xh,8 + 6,4 Xc, + 0,2 Xc, + 0,2 Xc,	+ 2.1 + Kg,10 + Km,10 + 10 Xg, + 10 Xg, + 0.3 Xg, - + 0.5	= 2000 $= 600$ $= 600$ $= 7$	X3.6 + K3.6 + X4.6 + X4.6 + X4.6 + X4.6 + X4.6	1.5 × 5 × 10) 1.6 × × × 100) + × 6 × 8 + × 8 × 0 - ×
max sell s.t.	1- cost X 3.6 + X 4.6 - 6 X 5,6 - 6 X 1.6 0.3 X c,1 0.5 X c,1 0.6 X c, gurobi doj unlui	+ 3 xc,2 - xg,8 + xh,8 + 8 xg,8 + 8 xh,8 + 0,2 xc, + 0,2 xc,	+ \$3,10 + K9,10 + (0 X9, + (0 X), + (0,3), 2 + 0.3	≤ 2000 ≤ 600 ≤ 600 $\geq 9($ ≤ 200 ≤ 600 ≤ 60	X3,6 + X9,6 + X9,6 + X1,6 + X1	1.5 × 5 × 10) 1.6 × × × 100) + × 6 × 8 + × 8 × 0 - ×
max sell s.t.	1- cost XJ.6 + Xh.6 - 6X5,6 - 6X7,6 - 0.3Xc,1 0.5Xc,1 0.6Xc, gurobi bj. value	+ 3 Xc,2 + Xh,8 + 8 Xh,8 + 8 Xh,8 + 0,2 Xc, + 0,2 Xc, + 0,4 Xc,	+ \$3,10 + Kg,10 + 10 xg, + 10 xg, + 10 xg, + 0,3 x	= 2000 $= 600$ $= 600$ $= 10 = 9$ $= 10 = 10$ $= 10$	X3.6 + X9.6 + X X X X X X X X X X X X X X X X X X	1.5 × 6 × 10.0) 1.8 × × (mco) + × 6 × 8 1.4 × × × × × × × × × × × × × × × × × × ×
max sell s.t.	1- cost XJ.6 + Xh.6 - 6X5,6 - 6X7,6 - 0.3Xc,1 0.5Xc,1 0.6Xc, gurobi bj. value	+ 3 Kc,2 - Kg,8 + 8 Kg,8 + 8 Kh,8 + 0,2 Kc, + 0,2 Kc, + 0,4 Kc, - 0,2 Kc, - 0,2 Kc, - 0,2 Kc, - 0,2 Kc,	+ × × × × × × × × × × × × × × × × × × ×		X3,6 + X9,6 + X9,6 + X1,6 + X1	15 X 8 4 10) 16 8 4 Xm (a) + X 8 7 10 - X 0 - X 8 4 10,

(00 - X	represe	end the rell	-	210 5		
		current	future			
	purchase	Current	Tulure			
/ XI \	1 20 1	/ 70	136			
X2	15	74	139			
X3	70	43	42			
Xu.	35	47	45			
χφ.	73		43			
Xs	1 40	49	51			
Χo	45	53	- 72	2 Chamilla	m may sel .	
14		1				
K9	20	60	63			
X8	\$5	\ b>	64			
XX	1 3	\-			00.5	
\xq/	60	64/	64	. s. cal	daires	
\ /			()			
Xio	65	99	70.			
	+T*		E) (100)	1 - ~)	- 3	
mar s.t.	(0,99	C 0.3(C	- P)) (100 :	1 - ×)	= 70 000	
	(0,99	C - 0,3 (C		1 - X) selling		ch stack
	(0,99	C - 0,3 (C	- P)) (100 :	1 - X) Selling		ch stock
	(0,99	C - 0,3 (C	- P)) (100 :	1 - X) Selling		ch stock
	(0,99	C 013 (C price transaction fee	- P)) (100:	Selling	unit of ea	
	all current princy or or	C 013 (C price transaction fee	- P)) (100:	Selling		
	all current princy or or	C 013 (C price transaction fee	- P)) (100:	Selling	unit of ea	
S.t.	all current i	C 013 (C price transaction fee	- P)) (100:	Selling	unit of ea	
	all current i	C 013 (C price transaction fee	- P)) (100:	Selling	unit of ea	
s.t. ⇒ by gur	all current in minus o.o	C 0.3 (C price transaction fee	- P)) (100:	Selling	unit of ea	
s.t. ⇒ by gur	all current i	O 0.3 (C price) timulation fee	(100 m	selling emaining a	unit of ea	
s.t. ⇒ by gur	all current princes of the control o	O 0.3 (C price) timulation fee	(100 m	selling emaining a	unit 59 cm	
s.t. ⇒ by gur	all current is winus one of the contract of t	C 0.3 (C price timuaction fee	- P)) (100: tax (00 mit	selling emaining a	unit should 1	
s.t. ⇒ by gur	all current princes of the color of the colo	or - 0.3 (C price transaction fee X (o	(00 m	selling comming	unit Should i	
s.t. ⇒ by gur	all current principles of the contract of the	O 0.3 (C price 1 transaction fee	(00 unit	selling	unit should 1 eK 1 3 4.	
s.t. ⇒ by gur	all current is minus and objective $X_1 = 100$ $X_2 = 100$ $X_3 = 0$ $X_4 = 0$ $X_5 = 100$	C 0.3 (C price tempaction fee cempionin	(00 mil	selling comining comi	unit should 1 eK 1 3 4.	
s.t. ⇒ by gur	all current prints of the contract of the con	C 0.3 (C price tennsaction fee X to cension """ 1	(00 unit	selling	unit should:	
s.t. ⇒ by gur	all current prints of the contract of the con	C 0.3 (C price tennsaction fee X to cension """ 1	(00 mil	selling	wit should i	
s.t. ⇒ by gur	all current 1 minus 0.01 minus 0.01 itimal objective $X_1 = (00)$ $X_2 = (00)$ $X_3 = (00)$ $X_4 = 0$ $X_5 = (00)$ $X_6 = 36.3$ $X_7 = (00)$	O 0.3 (C price 1 transaction fee	(00 unit	selling	unit should:	
s.t. ⇒ by gur	all current in which of the contract of the c	C 0.3 (C price tomation fee	(00 unit (00)	selling	wit should i	