

Optimization

Hour Exam 2000S

- 1) Describe in mathematical detail how to find the best values of A, B, C, D, E, and F for the following set of data. The following relationships must be satisfied: $A=B+C$ and $C+D=E.+F$

A	B	C	D	E	F
200	80	125	25	71	80
201	81	120	26	75	84
204	79	114	24	76	79
198	88	123	28	78	78
197	74	125	29	77	71
201	85	115	22	79	70

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5. Short Answer:
- What is the purpose of Data Adjustment?
 - What is the mathematical basis of the method?
6. Below are several LP tableaus in various states of completion. Describe the next step for each.

a)

x	y	z	S1	S2	S3		F	RHS
5	3	2	1	0	0		0	1000
2	2	1	0	1	0		0	200
0	5	6	0	0	1		0	100
-60	-50	-2	0	0	0		1	0

b)

x	y	z	S1	S2	S3	A	F	RHS
5	4	2	1	0	0	0	0	1000
2	10	1	0	1	0	0	0	200
0	2	6	0	0	-1	1	0	100
-40	-50	-2	0	0	0	M	1	0

c)

x	y	z	S1	S2	S3	A	F	RHS
0	3	0	1	4	3	2	0	280
0	2	1	0	1	0	-5	0	52
1	5	0	0	0	1	3	0	21
60	50	20	0	35	5	14	1	4560

- d) Circle the pivot in any of the above tableaus that are ready to use a pivot.

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4. Below are several LP tableaus in various states of completion. Describe the next step for each.

a)

X1	X2	X3	X4	S1	S2	S3	A1	A2	F	RHS
1	3			1						280
	2	1	1		-1		1			52
	5					1				14
1	1	3	2					1		240
-9	-6	-1	-5				100	100	1	0

Drive out the Big M's in Column A1 and A2

b)


x	y	z	S1	S2	S3	F	RHS
1		2	12	3			20
	1	1	21	1			54
		6	0.6	5	1		100
		15	58	6		1	2365

Completed

c)

X1	X2	X3	S1	S2	S3	F	RHS
7	4	2	1				2000
2	10	1		1			250
	2	6			1		160
-60	-50	-2				1	0

Enter X1 into the BFS

d) Circle the pivot(s) in any of the above tableaus that are ready to use a pivot. See 

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12. Below are several LP tableaus in various states of completion. Describe the next step for each.

a)

X1	X2	X3	S1	S2	S3		F	RHS
10	5	50	1	0	0		0	500
2	10	20	0	1	0		0	200
1	1	30	0	0	1		0	300
-40	-50	-	0	0	0		1	0
		15						

b)

X1	X2	X3	S1	S2	S3		-F	RHS
10	5	50	1	0	0		0	500
2	10	20	0	1	0		0	200
1	1	30	0	0	1		0	300
-40	-50	-	0	0	0		1	-5000
		15						

c)

x	y	z	S1	S2	S3	A	F	RHS
0	3	0	1	4	3	2	0	280
0	2	1	0	1	0	-5	0	52
1	5	0	0	0	1	3	0	21
60	50	20	0	35	5	14	1	4560

d)

x	y	z	S1	S2	S3	A1	A2	F	RHS
5	4	2	1	0	0	0	0	0	1000
2	10	1	0	-1	0	0	0	0	200
0	2	6	0	0	-1	1	1	0	100
-40	-50	-2	0	M	0	M	M	1	0

e) Circle the pivot in any of the above tableaus that are ready to use a pivot.

f) Which of the above tableaus are set up to find the **minimum**? _____