

Alen

Assignment 6

1)

2	5	7	2	4	10
3	6	1	5	2	5
6	3	5	4	3	20
5	7	5	3	2	4
6	4	6	3	4	6
3	20	10	10	2	

$$10 + 5 + 20 + 4 + 6 = 45$$

→ Balanced

$$3 + 20 + 10 + 10 + 2 = 45$$

Do VAM algo

	1	1	4	1	1	
0	2	5	7	2	4	10
1	3	6	1	5	2	80
1	6	3	5	4	3	20
1	5	7	5	3	2	4
1	6	4	6	3	4	6
3	20	10	10	2		

3	1	1	1	1			
0	2	5	7	2	4	16	7
1	3	6	1	5	2	0	
1	6	3	5	4	3	20	
1	5	7	5	3	2	4	
1	6	4	6	3	4	6	
3	20	5	10	2			

0	0	1	1	1	1	
2	2	5	7	2	4	70
0	3	6	1	5	2	0
0	6	3	5	4	3	20
1	5	7	5	3	2	4
1	6	4	6	3	4	6
0	20	5	10	2		
						3

	1	1	1	1	
2 ³	5	7	2 ⁷	4	0
3	6	1 ⁵	5	2	0
0	6	3	5	4	3 ₂ 20
1	5	7	5	3	2 ² 42
1	6	4	6	3	4 6
0	2	0	5	3	2

	1	1	1		
2 ³	5	7	2 ⁷	4	0
3	6	1 ⁵	5	2	0
1	6	3	5	4	3 ₂ 20
2	5	7	5	3 ²	2 ² 20
1	6	4	6	3	4 6
0	2	0	5	3	0

	1	1	1		
2 ³	5	7	2 ⁷	4	0
3	6	1 ⁵	5	2	0
1	6	3	5	4	3 ₂ 20
5	7	5	2 ²	2 ²	0
1	6	4	6	3 ¹	4 5
0	2	0	5	3	0

	1	1			
2 ³	5	7	2 ⁷	4	0
3	6	1 ⁵	5	2	0
2	6 ²⁰	3 ⁵	4	3	260
5	7	5	2 ²	2 ²	0
2	6 ⁵	4 ⁶	3 ¹	4	80
0	2	0	5	3	0

Final table:

2 ³	5	7	2 ⁷	4	10
3	6	1 ⁵	5	2	5
6	3 ²⁰	5	4	3	20
5	7	5	2 ²	2 ²	4
6	4	6 ¹	3 ⁴	4	6
3	2	0	1	0	2

$b_1=0, b_2=1, b_3=3, b_4=0, b_5=-1$

$a_1=2$	\odot^3	5	7	\odot^7	4
$a_2=-2$	3	6	\odot^5	5	2
$a_3=2$	6	\odot^{20}	5	4	3
$a_4=3$	5	7	5	\odot^2	\odot^2
$a_5=3$	6	4	\odot^5	\odot^1	4

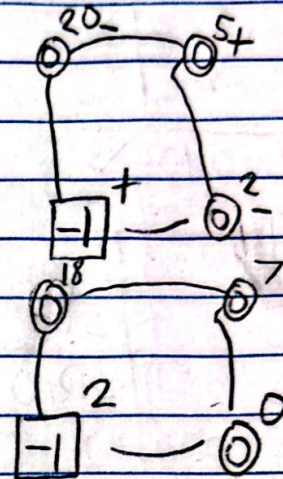
→

\odot^3	2	2	\odot^7	3
5	5	\odot^5	7	3
4	\odot^{20}	0	2	2
2	3	-1	0	\odot^2
3	0	\odot^5	\odot^1	2

$b_1=0, b_2=0, b_3=0, b_4=0, b_5=-1$

$a_1=0$	\odot^3	2	2	\odot^7	3
$a_2=0$	5	5	\odot^7	7	3
$a_3=0$	4	\odot^{18}	0	2	2
$a_4=-1$	2	3	\odot^2	0	\odot^2
$a_5=0$	3	0	\odot^5	\odot^1	2

cycle from
retribute:



go back to step 2

\odot^3	2	2	\odot^7	2
5	5	\odot^7	7	2
4	\odot^{18}	0	2	1
3	4	\odot^2	1	\odot^2
3	0	\odot^5	\odot^1	1

All cells $\geq 0 \rightarrow$ opt. solution

opt. sol.: $x_{11}=3, x_{14}=7, x_{23}=7, x_{32}=18,$
 $x_{43}=2, x_{45}=2, x_{53}=5, x_{54}=1$
 all other $x_{ij}=0$

2)

4	2	3	10
5	3	4	5
5	4	2	20
5	10	10	

Not balanced \rightarrow create fake market

4	2	3	10
5	3	4	5
5	4	2	20
5	10	10	

Apply VAM

1	4	2	3	10
1	5	3	4	5
2	5	4	2	20
5	10	10		

2	4	2	3	10
2	5	3	4	5
1	5	4	2	10
5	10	10		

4	2	3	0
5	3	4	5
5	4	2	10
5	0	0	

4	2	3
5	3	4
5	4	2

5	0	2
0	0	2
0	1	0

All cells $0 \leq \rightarrow$ Opt. sol.
 $x_{12}=10, x_{21}=5, x_{31}=10, x_{33}=10$