

Tutorial 7

Problem 1

(a) Vogel's approximation method would choose x_{21} as the first basic variable.

Cost Per Unit Distributed					
Destination					Row
	1	2	3	Supply	Difference
Source 1	15	9	13	7	4
Source 2	11	1M	17	5	6 <-- Maximum
Source 3	9	11	9	3	0
Demand	7	3	5		
Column Difference	2	2	4		

(b) Russell's approximation method would choose x_{12} as the first basic variable.

Cost Per Unit Distributed					
Destination					Row
	1	2	3	Supply	Maximum
Source 1	15	9	13	7	15
Source 2	11	1M	17	5	1M
Source 3	9	11	9	3	11
Demand	7	3	5		
Column Maximum	15	1M	17		

Δ_{ij}	1	2	3
1	-15	$-1M - 6$	-19
2	$-1M - 4$	$-1M$	$-1M$
3	-17	$-1M$	-19

(c) Initial BF solution using northwest corner rule:

		Destination			
		1	2	3	Supply
Source	1	7	-	-	7
	2	-	3	2	5
	3	-	-	3	3
	Demand	7	3	5	

Problem 2

(a)

		Unit Shipping Cost				
		Retail		Outlet		
		1	2	3	4	Supply
Plant	1	700	800	500	200	10
	2	200	900	100	400	20
	3	400	500	300	100	20
	4	200	100	400	300	10
Demand		20	10	10	20	

(b)

	Destination				Supply	u[i]
	1	2	3	4		
	700	800	500	200		
1	----- B	-----	-----	-----		
	10	0	0	0	10	0
	200	900	100	400		
2	----- B	----- B	-----	-----		
	10	10	0	0	20	0
	400	500	300	100		
3	-----	----- B	----- B	----- B		
	0	0	10	10	20	0
	200	100	400	300		
4	-----	-----	-----	----- B		
	0	0	0	10	10	0
Demand	20	10	10	20		
v[j]	0	0	0	0		
					Z = 25000	

(c)

	Destination					
	1	2	3	4	Supply	u[i]
	700	800	500	200		
1	---- L	----	----	---- E		
	10	-600	-700	-800	10	700
	200	900	100	400		
2	---- P	---- P	----	----		
	10	10	-600	-100	20	200
	400	500	300	100		
3	----	---- P	---- B	---- P		
	600	0	10	10	20	-200
	200	100	400	300		
4	----	----	----	---- B		
	200	-600	-100	10	10	0
Demand	20	10	10	20		
v[j]	0	700	500	300		
						Z = 25000