

§7.3 (PART 2): TRANSPORTATION SIMPLEX METHOD

1.] Solve the following Transportation LP using the Transportation Simplex Method. Use the minimum cost method to find an initial bfs.

$v_1=2$ $v_2=1$ $v_3=2$

$u_1=0$	5	1	7	Supply:
	-3	10	-5	10
$u_2=4$	6	*Enter 4	6	80
	70	-1	10	
$u_3=1$	3	2	5	15
	5	10	-3	
$u_4=0$	5	3	2	40
	-3	-2	40	
<u>Demand:</u>	75	20	50	

	5	1	7	Supply:
		10		10
	6	4	6	80
	$70-\theta$	θ	10	
	3	2	5	15
	$5+\theta$	$10-\theta$		
	5	3	2	40
			40	
<u>Demand:</u>	75	20	50	

* Leaving

$v_1=3$ $v_2=1$ $v_3=3$

$u_1=0$	5	1	7	Supply:
	-2	10	-4	10
$u_2=3$	6	4	6	80
	60	10	10	
$u_3=0$	3	2	5	15
	15	-1	-2	
$u_4=-1$	5	3	2	40
	-3	-3	40	
<u>Demand:</u>	75	20	50	

* optimal!

Solution: $x_{12} = 10$, $x_{21} = 60$, $x_{22} = 10$,
 $x_{23} = 10$, $x_{31} = 15$, $x_{34} = 20$

Obj. Fun.: $Z = 595$

2.] Solve the following Transportation LP using the Transportation Simplex Method. Use the minimum cost method to find an initial bfs.

$V_1=2 \quad V_2=1 \quad V_3=2$

	5	1	7	
$u_1=0$	-3	10	-5	
$u_2=4$	6	*Enter	4	6
	30		-1	50
$u_3=1$	3		2	5
	5	10		-2
$u_4=-2$	0	0		M
	40	-1	$-M$	
<u>Demand:</u>	75	20	50	

Supply:
10
80
15
40

	5	1	7	
		10		
	6		4	6
	$30-\theta$	θ		50
	3		2	5
	$5+\theta$		$10-\theta$	*Leave
	0	0		M
	40			
<u>Demand:</u>	75	20	50	

Supply:
10
80
15
40

$V_1=3 \quad V_2=1 \quad V_3=3$

	5	1	7	
$u_1=0$	-2	10	-4	
$u_2=3$	6		4	6
	20	10		50
$u_3=0$	3		2	5
	15		-1	-2
$u_4=-3$	0	0		M
	40	-2	$-M$	
<u>Demand:</u>	75	20	50	

Supply:
10
80
15
40

Optimal

Solution: $x_{12}=10, x_{21}=20, x_{22}=10, \dots$
 $x_{23}=50, x_{31}=15, x_{41}=40$

Obj Fun: $Z = 515$