

§7.2: FINDING A BFS OF A TRANSPORTATION PROBLEM

1.] Use the Northwest Corner method to find a bfs to the Transportation LP given by the grid below.

Note: The NW-Corner method ignores cost.

	10	2	20	11	Supply
	(5) →	(10)			15
	12	(5) ↓	(15) →	(5)	25
	4	14	16	(10) ↓	10
Demand	5	15	15	15	

bfs:  $x_{11} = 5, x_{12} = 10, x_{22} = 5, x_{23} = 15, x_{24} = 5, x_{34} = 10$ , the rest are zero.  
 What is the initial objective function value of this bfs?

Initial  $z = (10)(5) + (2)(10) + (7)(5) + (9)(15) + (20)(5) + (18)(10) = \boxed{520}$

2.] Use the Minimum-Cost method to find a bfs to the Transportation LP given by the grid below.

	10	2	20	11	Supply
		(15)			15
	12		(15)	(5)	25
	(5)	14		(5)	10
Demand	5	15	15	15	

bfs:  $x_{12} = 15, x_{13} = 5, x_{23} = 15, x_{24} = 5, x_{34} = 5$ , the rest are zero.  
 What is the initial objective function value of this bfs?

Initial  $z = (2)(15) + (4)(5) + (9)(15) + (18)(5) + (20)(5) = \boxed{475}$

3.] Use Vogel's method to find a bfs to the Transportation LP given by the grid below.

	10	2	20	11
	15			
	12	7	9	20
	15		10	
	4	14	16	18
	5		5	

Supply	<u>R1</u>	<u>R2</u>	<u>R3</u>
15	8	9	9
25	2	2	11
10	10	2	2

Demand  
R1  
R2  
R3

5	15	15	15
6	5	7	7
	5	7	7
		7	7

What is the initial objective function value of this bfs?

$$\text{Initial } z = (4)(5) + (2)(15) + (9)(15) + (18)(5) + (20)(10) = \boxed{475}$$