Section 7.2

Quick overview:

- What is a BFS for the transportation problem? How can one be identified in a transportation tableau?
- Methods for computing an initial BFS:
  - NW Corner Rule
  - Minimum Cost Rule
  - Vogel's Method

Homework for 7.2

1. (*) Given below is a transportation tableau. Get an initial basic feasible solution using our three methods: (i) NW Corner Rule, (ii) Minimum Cost, and (iii) Vogel's Approximation Method (VAM). Compare the cost for the three.

	1	2	3	4	
Plant 1	8	6	10	9	45
Plant 2	9	12	13	7	60
Plant 3	14	9	16	7	50
Demand	45	30	40	40	155

2. Repeat the same techniques for the transportation tableau below:

	A	B	C	
Plant 1	5	4	3	100
Plant 2	8	4	5	300
Plant 3	9	7	5	300
Demand	300	200	200	700

3. (*) Shown below is a series of transportation tableaux. An asterisk in the box means that there is a number in that box.

   In each tableau, identify the loop.

(a)

*			*
		*	*
*	*		*

(b)

*			*
*	*		*
		*	

(c)

*	*		
*		*	*
	*		*

(d)

*	*		*
		*	*
	*	*	

(e)

*	*		
*		*	*
	*	*	

4. For the following 3×4 array, we have placed 6 numbers (indicated by the asterisks). You should note that no loop currently exists. Show that, no matter where one may place a 7th number (in the 6 remaining positions), you will create a loop. You might verify by showing the loop for the 6 possibilities.

		*	*
*	*		
*		*	

5. For the transportation problem below, write the dual, using u_i for the supply equations and v_j for the demand equations (recall that the transportation problem is actually the dual, and the dual of that is the primal).

	A	B	C	
Plant 1	5	4	3	150
Plant 2	8	4	5	350
Demand	200	100	200	300