An example to show the equivalence between the transportation algorithm and the simplex algorithm.

0	[illegible]	2
−2	[illegible]	[illegible]
−6	−[illegible]	[illegible]

Shift 20 units around the loop.

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−280	0	0	2	−2	0	0	−6	−8	0
10	0	1	1	−1	0	0	−1	0	0
0	0	0	1	0	0	1	−1	−1	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0

Pivot to get x_{32} up to 20.

0	0	−6
6	8	0
2	0	0

Shift 0 units around the loop.

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−160	0	0	−6	6	8	0	2	0	0
10	0	1	1	−1	0	0	−1	0	0
20	0	0	0	1	1	1	0	0	0
0	0	0	1	−1	−1	0	0	0	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0

Perform the degenerate pivot to make x_{13} basic.

0	0	0
0	2	0
2	0	6

Optimal form

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−160	0	0	0	0	2	0	2	0	6
10	0	1	0	0	1	0	−1	0	−1
20	0	0	0	1	1	1	0	0	0
0	0	0	1	−1	−1	0	0	0	1
10	1	0	0	1	0	0	1	0	0
20	0	0	0	0	0	0	1	1	1

Optimal form

Transportation table. Pivoting to get initial basis.

… the northwest corner rule solution.

For example, from Figure 7.2 we see that $x_{11} = 10$, so we pivot in the x_{11} column of the preceding simplex tableau to increase x_{11} up to 10, which gives the following tableau:

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−20	0	4	3	−1	5	2	−1	1	6
10	0	1	1	−1	0	0	−1	0	0
20	0	0	0	1	1	1	0	0	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
30	0	1	0	0	1	0	0	1	0
20	0	0	1	0	0	1	0	0	1

Continuing down the arcs in Figure 7.2, we now need to increase x_{12} up to 10, which is accomplished by performing the circled pivot in the preceding tableau to give the following tableau:

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−60	0	0	−1	3	5	2	3	1	6
10	0	1	1	−1	0	0	−1	0	0
20	0	0	0	1	1	1	0	0	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0
20	0	0	1	0	0	1	0	0	1

In this tableau we can increase x_{22} up to 20 by pivoting in row 2 or in row 5. Because we want to have $x_{23} = 0$ on the next pivot, we chose row 5 as the pivot row. This (circled) pivot yields the following tableau:

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−160	0	0	4	−2	0	2	−2	−4	6
10	0	1	1	−1	0	0	−1	0	0
0	0	0	1	0	0	1	−1	−1	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0
20	0	0	1	0	0	1	0	0	1

Two more pivots to obtain $x_{23} = 0$ and $x_{33} = 20$ as basic variables give the following two tableaus:

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−160	0	0	2	−2	0	0	0	−2	6
10	0	1	1	−1	0	0	−1	0	0
0	0	0	1	0	0	1	−1	−1	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0
20	0	0	0	0	0	0	1	1	1

	x_{11}	x_{12}	x_{13}	x_{21}	x_{22}	x_{23}	x_{31}	x_{32}	x_{33}
−280	0	0	2	−2	0	0	−6	−8	0
10	0	1	1	−1	0	0	−1	0	0
0	0	0	1	0	0	1	−1	−1	0
20	0	0	0	0	0	0	1	1	1
10	1	0	0	1	0	0	1	0	0
20	0	0	−1	1	1	0	1	1	0
0	0	0	0	0	0	0	0	0	0

Eliminating the row of zeros (corresponding to a redundant constraint) gives a canonical form tableau whose associated basic feasible solution is precisely the …