Amendments to Method Summaries in Sections 6.2 and 7.4

Lial et al., *Finite Mathematics with Applications*, 11th edition

updated: 29 November 2018

The Elimination Method (replacement for box p.278)

1. Make the leading coefficient of the first equation be as far to the left as possible by exchanging rows with a later equation, if necessary. Call the leading variable u, and call its coefficient a.
2. Eliminate u from each later equation as follows: let b be the coefficient of u in the later equation; replace the later equation by a times itself minus b times the first equation. [In the row operation notation of the text, this is replacing R_k by $aR_k - bR_1$.]
3. Repeat steps 1 and 2 for the second equation. Make its leading coefficient be as far to the left as possible by exchanging with a later equation, if necessary. Then eliminate its leading variable from each later equation.
4. Repeat steps 1 and 2 for the third equation, fourth equation, and so on, until it is not possible to go any further.
5. *(Do this step if the final system is required to be in row echelon form.)* Make the leading coefficient of each row be 1 by multiplying each row by the reciprocal of its leading coefficient.

The Simplex Method for standard maximization problems (amendments to box on pp.364--365)

1. (no change from the text)
2. (no change from the text)
3. (no change from the text)
4. (no change from the text)
5. (no change from the text)
6. (no change from the text)
7. Call the pivot row number p, and call the pivot entry a. Change all the other entries in the pivot column to 0 as follows. For every row number k with $k \neq p$, replace row k by $aR_k - bR_p$, where b is the entry in the pivot column in row k.
8. (no change from the text)
9. In the final tableau, the *basic* variables correspond to the columns that have one entry that is not 0 and the rest of the entries are 0. The *nonbasic* variables correspond to the other columns. Set each nonbasic variable equal to 0 and solve the system for the basic variables. The maximum value of the objective function is the value for the objective variable z.