A simplex Optimization

Starting from Tableau ①, and entering x_2, exiting x_5 get Tableau ②

	x_1	x_2	x_3	x_4	x_5	z	
x_3	$\frac{7}{2}$	0	1	0	$-\frac{5}{2}$	0	14
x_4	$-\frac{1}{2}$	0	0	1	$\frac{1}{2}$	0	8
x_5	$-\frac{1}{2}$	1	0	0	$\frac{1}{2}$	0	1
	$-\frac{13}{2}$	0	0	0	$\frac{7}{2}$	1	7

x_1 enters (has the most negative objective row coefficient.

The pivotal column is the x_1-column.

We form the ratios: $\frac{\text{values of basic variable}}{\text{coefficient of the basic variable in the } x_1\text{-column}}$

(called θ-ratio: these are the values x_2 will take if the corresponding basic variable exits.)

Discard any ratio having denominator 0

Discard any ratio having a negative denominator

(No exceptions in the basic simplex method. There are exceptions in §2.3, only when the value of the exiting variable is 0.)

The remaining θ-ratios are ≥ 0. The exiting variable is any variable having the smallest θ-ratio.

A routine pivot leads to Tableau ③