

A Two-phase Optimization

Phase 1, Tableau 0:

	x_1	x_2	x_3	x_4	y_1	y_2	y_3	y_4	
y_1	5	-1	0	0	1	0	0	0	32
y_2	-2	4	3	0	0	1	0	0	12
y_3	7	-5	-3	-1	0	0	1	0	20
y_4	3	3	3	0	0	0	0	1	44
	0	0	0	0	1	1	1	1	0

Phase 1, Tableau 2:

	x_1	x_2	x_3	x_4	y_1	y_2	y_3	y_4	
y_1	0	$\frac{18}{7}$	$\frac{15}{7}$	$\frac{5}{7}$	1	0	$-\frac{5}{7}$	0	$\frac{124}{7}$
y_2	0	$\frac{18}{7}$	$\frac{15}{7}$	$-\frac{2}{7}$	0	1	$-\frac{2}{7}$	0	$\frac{124}{7}$
x_1	1	$-\frac{5}{7}$	$-\frac{3}{7}$	$-\frac{1}{7}$	0	0	$-\frac{1}{7}$	0	$\frac{20}{7}$
y_4	0	$\frac{36}{7}$	$\frac{30}{7}$	$\frac{3}{7}$	0	0	$-\frac{2}{7}$	1	$\frac{248}{7}$
	0	$-\frac{72}{7}$	$-\frac{60}{7}$	$-\frac{6}{7}$	0	0	$-\frac{18}{7}$	0	$-\frac{496}{7}$

Phase 1, Tableau 1:

	x_1	x_2	x_3	x_4	y_1	y_2	y_3	y_4	
y_1	5	-1	0	0	1	0	0	0	32
y_2	-2	4	3	0	0	1	0	0	12
y_3	7	-5	-3	-1	0	0	1	0	20
y_4	3	3	3	0	0	0	0	1	44
	-13	-1	-3	1	0	0	0	0	-108

Phase 1, Tableau 3 is optimal:

	x_1	x_2	x_3	x_4	y_1	y_2	y_3	y_4	
x_2	0	1	$\frac{5}{6}$	$\frac{5}{18}$	$-\frac{7}{18}$	0	$-\frac{5}{18}$	0	$\frac{62}{9}$
y_2	0	0	0	-1	$-\frac{1}{18}$	1	$-\frac{1}{18}$	0	0
x_1	1	0	$\frac{1}{6}$	$\frac{1}{18}$	$-\frac{5}{18}$	0	$-\frac{1}{18}$	0	$\frac{70}{9}$
y_4	0	0	0	-1	$-\frac{2}{18}$	0	$-\frac{1}{18}$	1	0
	0	0	0	2	$-\frac{1}{18}$	0	$-\frac{1}{18}$	0	0

Phase 2

Tableau 0:

	x_1	x_2	x_3	x_4	y_2	y_4	
x_2	0	1	$\frac{5}{6}$	$\frac{5}{18}$	0	0	$\frac{62}{9}$
y_2	0	0	0	-1	1	0	0
x_1	1	0	$\frac{1}{6}$	$\frac{1}{18}$	0	0	$\frac{70}{9}$
y_4	0	0	0	-1	0	1	0
	2	3	2	0	0	0	0

Tableau 2:

	x_1	x_2	x_3	x_4	y_2	y_4	
x_2	0	1	$\frac{5}{6}$	0	$-\frac{5}{18}$	0	$\frac{62}{9}$
x_4	0	0	0	1	$-\frac{1}{18}$	0	0
x_1	1	0	$\frac{1}{6}$	0	$-\frac{1}{18}$	0	$\frac{70}{9}$
y_4	0	0	0	0	$-\frac{1}{18}$	1	0
	0	0	$-\frac{5}{6}$	0	$-\frac{17}{18}$	0	$-\frac{326}{9}$

Tableau 1:

	x_1	x_2	x_3	x_4	y_2	y_4	
x_2	0	1	$\frac{5}{6}$	$\frac{5}{18}$	0	0	$\frac{62}{9}$
y_2	0	0	0	-1	1	0	0
x_1	1	0	$\frac{1}{6}$	$\frac{1}{18}$	0	0	$\frac{70}{9}$
y_4	0	0	0	-1	0	1	0
	0	0	$-\frac{5}{6}$	$-\frac{17}{18}$	0	0	$-\frac{326}{9}$

Tableau 3 is optimal:

	x_1	x_2	x_3	x_4	y_2	y_4	
x_3	0	$\frac{6}{5}$	1	0	$-\frac{1}{3}$	0	$\frac{124}{15}$
x_4	0	0	0	1	$-\frac{1}{15}$	0	0
x_1	1	$-\frac{1}{5}$	0	0	$-\frac{1}{15}$	0	$\frac{32}{5}$
y_4	0	0	0	0	$-\frac{1}{15}$	1	0
	0	1	0	0	$-\frac{2}{3}$	0	$-\frac{88}{3}$