

2013 [3] Q1

Max. $5000x_1 + 7000x_2$

st: $3000x_1 + 4000x_2 \leq 6000$ cost produce

$5x_1 + 4x_2 \leq 100$ time

$x_2 \leq 7$ $x_1, x_2 \geq 0$

		x_1	x_2	s_1	s_2	s_3	
Basis	C_B	5000	7000	0	0	0	
s_1	0	3000	4000	1	0	0	6000 $\frac{6000}{4000} = 1.5$
s_2	0	5	4	0	1	0	100 $\frac{100}{4} = 25$
s_3	0	0	(1)	0	0	1	7 $\frac{7}{1} = 7$
ZJ		0	0	0	0	0	0
$C_J - Z_J$		5000	(7000)	0	0	0	

$x_1 = 0, x_2 = 0, s_1 = 6000, s_2 = 100, s_3 = 7, P = 0$

x_2 enter, s_3 leave, want $\frac{0}{1}$ row 2 - 4(row 3) $r_1 = 4000(\text{row 1})$

		x_1	x_2	s_1	s_2	s_3	
Basis	C_B	5000	7000	0	0	0	
s_1	0	(3000)	0	1	0	-4000	32000 $\frac{32000}{7000} = 4.57$
s_2	0	5	0	0	1	-4	72 $\frac{72}{5} = 14.4$
x_2	7000	0	1	0	0	1	7
ZJ		0	7000	0	0	7000	49000
$C_J - Z_J$		(5000)	0	0	0	-7000	

$x_1 = 0, x_2 = 7000, s_1 = 32000, s_2 = 72, s_3 = 0, P = 49000$

x_1 enter, s_1 leave, want $\frac{1}{0}$

row 1 $\div 3000$

row 2 - 5(row 1)

		x_1	x_2	s_1	s_2	s_3	
Obj	C_b	5000	7000	0	0	0	
x_1	5000	1	0	$\frac{1}{3000}$	0	$-\frac{1}{3}$	$3\frac{2}{3}$
s_2	0	0	0	$-\frac{5}{3000}$	1	$\frac{8}{3}$	$5\frac{2}{3}$
x_2	7000	0	1	0	0	1	7
RHS		5000	7000	$\frac{5}{3}$	0	$\frac{1000}{3}$	$30\frac{7000}{3}$
$G_1 - 2G_2$		0	0	$-\frac{5}{3}$	0	$-\frac{1000}{3}$	

$$x_1 = 3\frac{2}{3}, x_2 = 7, s_1 = 0, s_2 = 5\frac{2}{3}, s_3 = 0$$

ii s_1 constraint 1 binding and s_3 constraint 3, ~~non~~ binding
 s_2 non binding $5\frac{2}{3}$ excess until max used

2010

Q 26

	P1	P2	P3	P4	P5	Supply
D1	97(300)	65	53	44	0	400-300
D2	53	92	8	10	0	560
D3	28	60	78	34	0	320
D4	13	81	31	41	0	220
Demand	300-200	300	300	300	200	

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Demand	0	300	300	300	200	

	P1	P2	P3	P4	P5	Supply
D1	300	100				0
D2		200	300	60		300-60
D3				240	80	0
D4					220	200
Demand	0	0	0	200	270	

Vam method

row 1 $53-44 = 9$
 2 $10-8 = 2$
 3 $34-28 = 6$
 4 $31-13 = 18$

column 1 $28-13 = 15$
 2 $65-60 = 5$
 3 $31-8 = 23$
 4 $34-12 = 22$

	P1	P2	P3	P4				
D1				300	19	19	19	
2					20	22	25	
3					21	23	26	
4					24	25	28	