

Problema das Duas Minas

Min

$$C = 180x + 160y$$

suj. a:

$$6x + y \geq 12$$

$$3x + y \geq 8$$

$$4x + 6y \geq 24$$

$$x \leq 5$$

$$y \leq 5$$

Min

$$C = 180x + 160y$$

suj. a:

$$6x + y = 12 + fa$$

$$3x + y = 8 + fb$$

$$4x + 6y = 24 + fc$$

$$x = 5 - f1$$

$$y = 5 - f2$$

$$C - 180x - 160y - 0$$

$$6x + y - fa = 12$$

$$3x + y - fb = 8$$

$$4x + 6y - fc = 24$$

$$x + f1 = 5$$

$$y + f2 = 5$$

não básicas

Básicas

	C	x	y	fa	fb	fc	f1	f2	
L1	1	-180	-160	0	0	0	0	0	0
L2	0	6	1	-1	0	0	0	0	12
L3	0	3	1	0	-1	0	0	0	8
L4	0	4	6	0	0	-1	0	0	24
L5	0	1	0	0	0	0	1	0	5
L6	0	0	1	0	0	0	0	1	5

Solução

Básica

$$fa = -12$$

$$fb = -8$$

$$fc = -24$$

$$f1 = 5$$

$$f2 = 5$$

$$nL2 \Rightarrow L2 / -1$$

$$nL3 \Rightarrow L3 / -1$$

$$nL4 \Rightarrow L4 / -1$$

aleatoriamente:

y entra

fa sai

não factível

	C	x	y	fa	fb	fc	f1	f2	
L1	1	-180	-160	0	0	0	0	0	0
L2	0	-6	-1	1	0	0	0	0	-12
L3	0	-3	-1	0	1	0	0	0	-8
L4	0	-4	-6	0	0	1	0	0	-24
L5	0	1	0	0	0	0	1	0	5
L6	0	0	1	0	0	0	0	1	5

$$nL2 \Rightarrow L2 / -1$$

passando a limpo

	C	x	y	fa	fb	fc	f1	f2	
L1	1	780	0	-160	0	0	0	0	1920
L2	0	6	1	-1	0	0	0	0	12
L3	0	3	0	-1	1	0	0	0	4
L4	0	32	0	-6	0	1	0	0	48
L5	0	1	0	0	0	0	1	0	5
L6	0	-6	0	1	0	0	0	1	-7

$$nL1 \Rightarrow L1 + 160 * nL2$$

$$nL3 \Rightarrow L3 + 1 * nL2$$

$$nL4 \Rightarrow L4 + 6 * nL2$$

$$nL5 \Rightarrow L5$$

$$nL6 \Rightarrow L6 - 1 * nL2$$

não factível

aleatoriamente:

x entra

fb sai

	C	x	y	fa	fb	fc	f1	f2	
L1	1	780	0	-160	0	0	0	0	1920
L2	0	6	1	-1	0	0	0	0	12
L3	0	3	0	-1	1	0	0	0	4
L4	0	32	0	-6	0	1	0	0	48
L5	0	1	0	0	0	0	1	0	5
L6	0	-6	0	1	0	0	0	1	-7

$$nL3 \Rightarrow L3 / 3$$

	C	x	y	fa	fb	fc	f1	f2	
L1	1	0	0	100	-260	0	0	0	880
L2	0	0	1	1	-2	0	0	0	4
L3	0	1	0	-0,33	0,333	0	0	0	1,333
L4	0	0	0	4,667	-10,67	1	0	0	5,333
L5	0	0	0	0,333	-0,33	0	1	0	3,667
L6	0	0	0	-1	2	0	0	1	1

Solução

Básica

$$y = 4$$

$$x = 1,33$$

$$fc = 5,33$$

$$f1 = 3,67$$

$$f2 = 1$$

$$nL1 \Rightarrow L1 - 780 * nL3$$

$$nL2 \Rightarrow L2 - 6 * nL3$$

$$nL4 \Rightarrow L4 - 32 * nL3$$

$$nL5 \Rightarrow L5 - 1 * nL3$$

$$nL6 \Rightarrow L6 + 6 * nL3$$

factível (ufa!)