Problema 2

x = cuidado de tierra

y = crecimiento de plantas

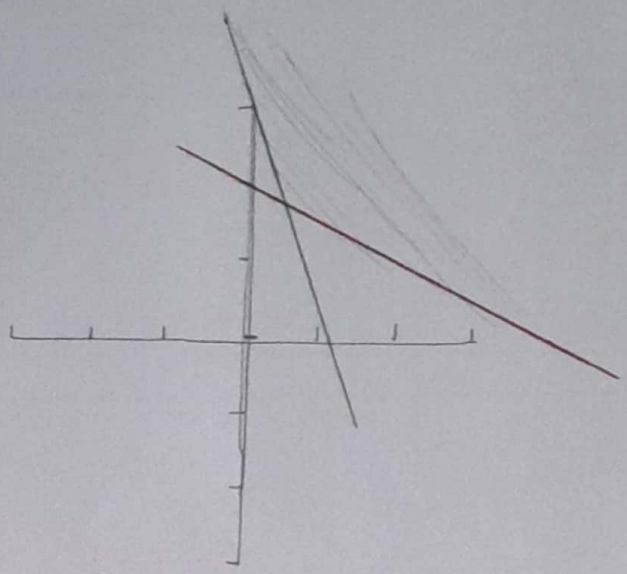
$2.5x + y \geq 3$

$1x + 2y \geq 4$

$x, y \geq 0$

Minimizar $z = 0.30x + 0.52y$

1)



2) $2.5x + y = 3$ $\quad x + 2y = 4$

$y = 3 - 2.5x$ $\quad y = 2 - \frac{x}{2}$

$2 - 0.5x = 3 - 2.5x$

$x = 0.5$

$y = 1.75$

$z = 0.30(0.5) + 0.52(1.75)$

$z = 1.06$

R// Min $z = 1.06$

3) $y = 1$

$2.5x + 1 \geq 3$ $\quad x + 2 \geq 4$

$x \geq 0.8$ $\quad x \geq 2$

$z = 0.3(0.8) + 0.52$

$z = 0.76$

ó

$z = 0.3(2) + 0.52$

$z = 1.12$

R// La sol. óptima es usar 0.8 kilos de tierra negra y 1 kilo de fertilizante para así minimizar costos.

Problema 7

XA naranja
XB
XC
XD

Max $Z = 5XA + 7XB + 6XC + 4XD$ *100

S.a

$0.10XA + 0.05XB + 0.2XC + 0.15XD \leq 50$ *100

$0.20XA + 0.10XB + 0.05XC + 0.05XD \leq 75$ *100

$0.05XA + 0.1XB + 0.1XC + 0.1XD \leq 20$ *100

Forma estandar

$Z - 500XA - 700XB - 600XC - 400XD = 0$

$10XA + 5XB + 20XC + 15XD + S1 = 5,000$

$20XA + 10XB + 5XC + 5XD + S2 = 7,500$

$5XA + 10XB + 10XC + 10XD + S3 = 2,000$

	Z	XA	XB	XC	XD	S1	S2	S3	R
Z	100	-500	-700	-600	-400	0	0	0	0
S1	0	10	5	20	15	1	0	0	5,000
S2	0	20	10	5	5	0	1	0	7,300
S3	0	5	10	10	10	0	0	1	2,000

$5,000 \div 5 = 1000$

$7,500 \div 10 = 750$

$2,000 \div 10 = 200$ *

	Z	XA	XB	XC	XD	S1	S2	S3	R
Z	100	-500	-700	-600	-400	0	0	0	0
S1	0	10	5	20	15	1	0	0	5,000
S2	0	20	10	5	5	0	1	0	7,500
S3	0	1/2	1	1	1	0	0	1/10	200

$700F_4 + F_1 = F_1$

$-5F_4 + F_2 = F_2$

$-10F_4 + F_3 = F_3$

	Z	XA	XB	XC	XD	S1	S2	S3	R
Z	100	-750	0	100	300	0	0	70	14,000
S1	0	7.5	0	15	10	1	0	-1/2	4,000
S2	0	15	0	-5	-5	0	1	-1	5,500 ÷ 15
XB	0	1/2	1	1	1	0	0	1/10	200

$14,000 \div 750 = 93.33$

$4,000 \div 7.5 = 533.33$

$5,500 \div 15 = 366.67$

$200 \div 1/2 = 400$

	Z	XA	XB	Xc	XD	S1	S2	S3	R
Z	100	-150	0	100	300	0	0	70	14,000
S1	0	7.5	0	15	10	1	0	-1/2	4,000
XA	0	1	0	-1/3	-1/3	0	0	-1/15	1100/3
XB	0	1/2	1	1	1	0	0	1/10	200

$F_1 + 150 F_3 = F_1$

$F_2 - 7.5 F_3 = F_2$

$F_4 - 1/2 F_3 = F_4$

	Z	XA	XB	Xc	XD	S1	S2	S3	R
Z	100	0	0	50	250	0	0	60	69,000
S1	0	0	0	35/2	25/2	1	0	0	1,250
XA	0	1	0	-1/3	-1/3	0	0	-1/15	1100/3
XB	0	0	1	5/2	5/2	0	0	38/3	50/3

$XA = 366.67$

$XB = 16.67$

$Xc = 0$

$XD = 0$

$Z = 1950.00$

R// 1. El ingreso total máximo es de Q. 1950.00

2. Las bebidas C y D no se producen