Werner Grobler (42882583) DSC1520 Semester 1 - 2013
Assignment 2

Question 1:

2x	– 4y	+ 6z	=	-22	
-2x		+ z	=	-8	(+)
	- 4y	+ 7z	=	-30	*3
	-12y	+21z	=	-90	(1)
	3y	+z	=	10	*4
	12y	+4z	=	40	(2)
	-12y	+21z	=	-90	(+)(1)
		25z	=	-50	(/25)
		z	=	-2	
	3y	+(-2)	=	10	
		y	=	4	
	2x	-(-2)	=	8	
		x	=	3	

Question 2:

P	=	50	-3D
38	=	50	-3D
D	=	4	
P	=	14	+1.5S
38	=	14	+1.5S
S	=	16	

Therfore, when the Price is R 38, the quantity supplied is 16 and the quantity demanded is 4. A surplus supply of 12 is therfore created.

Question 3:

P	=	48 – 0.2Q	(Q=0)
P	=	48	(Price intercept)
P	=	48 – 0.2Q	
-48	=	-0.2Q	(P=0)
Q	=	240	(Quantity intecept)
P	=	48 -0.2Q	
30	=	48 -0.2Q	(When market price = 30)
0.2Q	=	18	
Q	=	90	

Consumer surplus = Amount the consumer is willing to pay – The amount actually paid by the consumer
= 0.5(30+48)*90 – 90*30
= 3510 – 2700
= 810

Question 4:

y + 6 = x^2 + x

0 = x^2 + x - 6 (make Y=)
= x^2 + 6x – x -6
= x(x+6) – (x+6)
= (x-1)(x+6)

Therfore
x = 1/-6

y = -6 (make x=0)

Question 5:

y = mx + c
y = mx + 2 (c=y-intecept)(At point 1;2)
y= -3x + 2 (m=Slope)(Slope of parallel line is the same)(y=-3x)

Question 6:

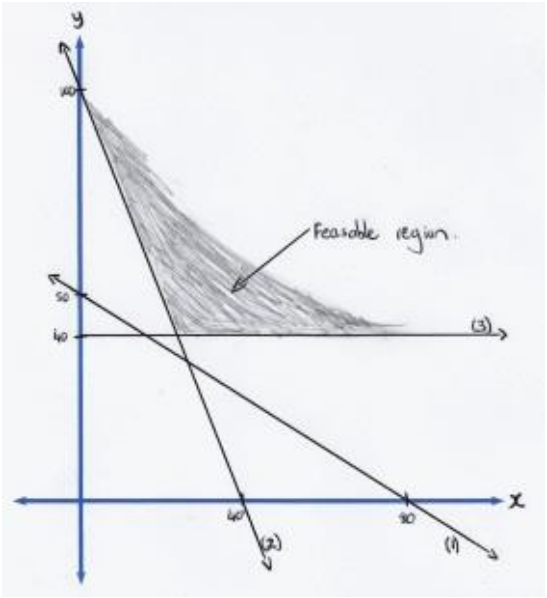
y = 3/4x + 6 (1)
2y = 3x + 3 (2)
2y = 6/4x + 12 (3)=(1)*2
0 = -3/2x – 9 (2)-(3)
1.5x = -9
x = -6

y = ¾(-6)+6
y = 1.5

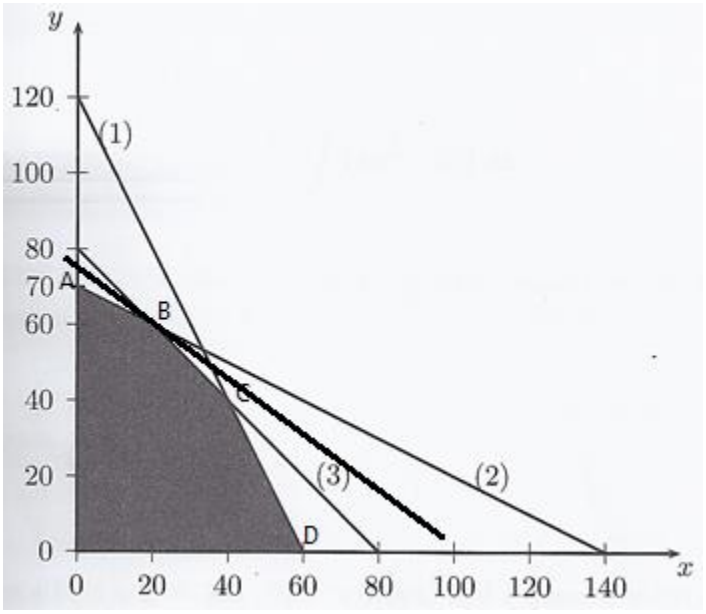
Therefore the line intersects at point (-6;1.5)

Question 7:

(1)	25x	+	40y	>=	2000	(80;50)
(2)	10x	+	4y	>=	400	(40;100)
(3)			y	>=	40	(0;40)



Question 8:



Point A: (0;70)
Point B: (20;60)

Calc: $x + 2y - 2y = 140 - 2y$ *(-2y both sides)*

$x = 140 - 2y$

$x + y = 80$
$(140 - 2y) + y = 80$
$-y = 80 - 140$
$y = 60$

$x + y = 80$
$x + 60 = 80$
$x = 20$

Point C: (40;40)

Calc: $2x + y - 2x = 120 - 2x$ *(-2x both sides)*

$Y = 120 - 2x$

$x + y = 80$ *(3)*
$x + (120 - 2x) = 80$
$x + 120 - 2x = 80$
$x = 40$
$x + y = 80$
$x + 40 = 80$
$x = 40$

Point D: (60;0).

Corner points of feasible region

		P = 20x + 30y
A	-	P = 20(0) + 30(70) = 2 100
B	-	P = 20(20) + 30(60) = 2 200
C	-	P = 20(40) + 30(40) = 2 000
D	-	P = 20(60) + 30(0) = 1 200

Therefore the maksimum point in feasable region is point B.

Question 9:

30x	+ 12y	<=	240
18x	+ 72y	<=	360
20x	+ 48y	<=	288

Question 10:

2x	+ 2y	<=	78
4x	+ 3y	<=	96

Profit = 42x + 46y