Exercise -2-

باستخدام طريقة الرسم أوجدي الحل الأمثل لمسائل البرامج الخطية التاليه

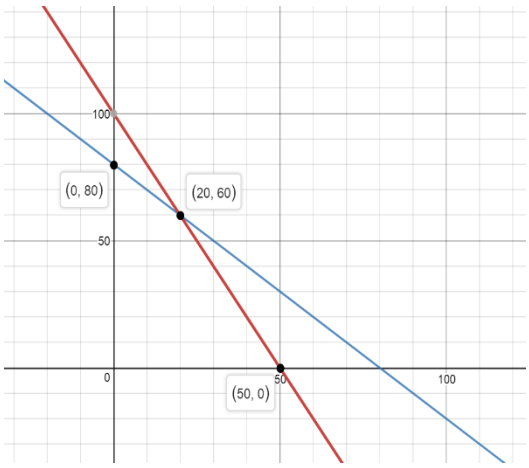
1- Max $Z = 50X_1 + 18X_2$

Subject to

$2X_1 + X_2 \leq 100$

$X_1 + X_2 \leq 80$

$X_1 \geq 0, X_2 \geq 0$



(X_1, X_2)	Z
(0,80)	1440
(20,60)	2080
(50,0)	2500

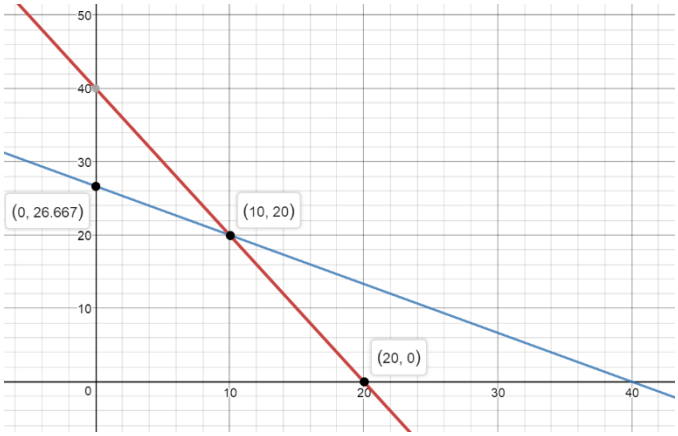
2- Max $Z = 10X_1 + 8X_2$

Subject to

$2X_1 + X_2 \leq 40$

$2X_1 + 3X_2 \leq 80$

$X_1 \geq 0, X_2 \geq 0$



(X_1, X_2)	Z
(0,26.667)	213.33
(10,20)	260
(20,0)	200

3- Max $Z = 300X_1 + 400X_2$

Subject to

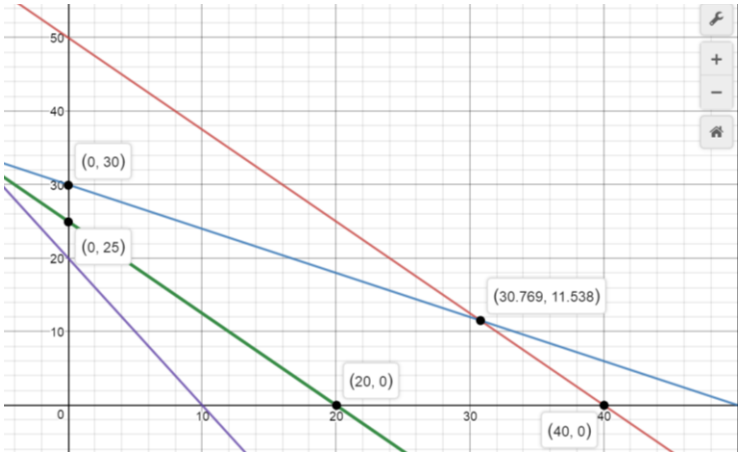
$5X_1 + 4X_2 \leq 200$

$3X_1 + 5X_2 \leq 150$

$5X_1 + 4X_2 \geq 100$

$8X_1 + 4X_2 \geq 80$

$X_1 \geq 0, X_2 \geq 0$



(X_1, X_2)	Z
(0,25)	10000
(0,30)	12000
(30.769,11.538)	13846.1
(40,0)	6000
(20,0)	12000

Range of optimality

$240 \leq C_1 \leq 500$

$240 \leq C_2 \leq 500$

4- Min $Z = 120X_1 + 100X_2$

Subject to

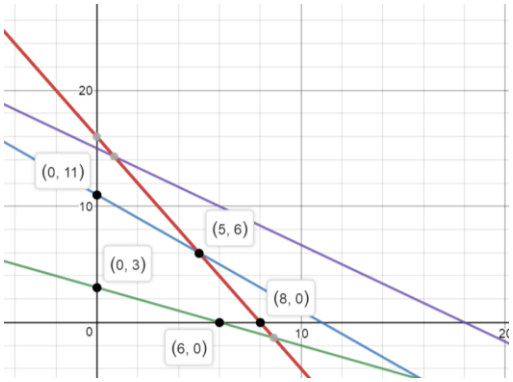
$10X_1 + 5X_2 \leq 80$

$6X_1 + 6X_2 \leq 66$

$4X_1 + 8X_2 \geq 24$

$5X_1 + 6X_2 \leq 90$

$X_1 \geq 0, X_2 \geq 0$



(X_1, X_2)	Z
(0,3)	300
(0,11)	1100
(5,6)	1200
(8,0)	960
(6,0)	720

5- Min $Z = 20X_1 + 40X_2$

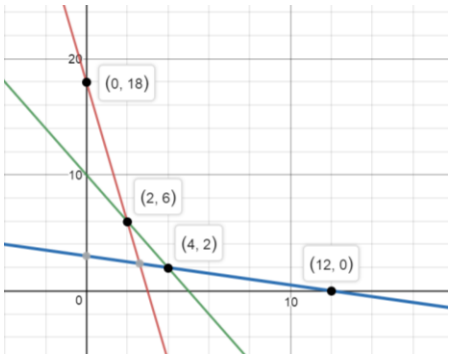
Subject to

$36X_1 + 6X_2 \geq 108$

$3X_1 + 12X_2 \geq 36$

$200X_1 + 100X_2 \geq 1000$

$X_1 \geq 0, X_2 \geq 0$



(X_1, X_2)	Z
(0,18)	720
(2,6)	280
(4,2)	160
(12,0)	240

Range of optimality

$10 \leq C_1 \leq 80$

$10 \leq C_2 \leq 80$