Bellwork Alg 2A Monday, December 5, 2016

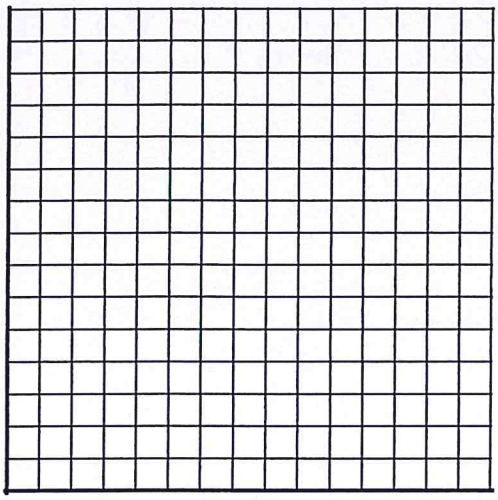
For 1 and 2:

a) Graph the given constraints (system of inequalities)

b) State the coordinates of all the vertices (corners) of the solution region.

c) Find the coordinates that Maximize or Minimize the given function.

1. $f(x) =$ $\begin{cases} 12x + 4y \leq 60 \\ 4x + 8y \leq 40 \\ x \geq 0 \\ y \geq 0 \end{cases}$

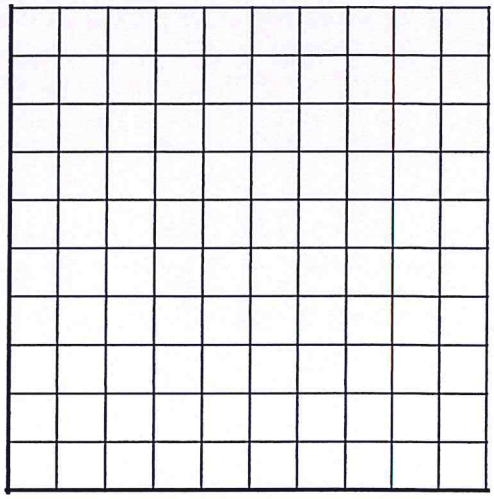


Coordinates of all Vertices:

Which coordinates Maximize:

$P = 3x + 7y$

2. $f(x)$ $\begin{cases} 3x + 3y \geq 18 \\ 8x + 4y \geq 32 \\ x \geq 0 \\ y \geq 2 \end{cases}$



Coordinates of all Vertices:

Which cooridnates Minimize:

$C = 2x + 9y$

3. Mike repairs lawnmowers and snowthrowers. It takes him 2 hours to repair a lawnmower and 90 minutes to repair a snowthrower. Parts for the repairs cost $20 for each lawnmower and $35 for each snowthrower. He is trying to make money to go on a ski trip. He only has $400 to spend on parts and can spend up to 40 hours making the repairs. When he picks up the equipment to be fixed he only has room for 12 items in the back of his truck.

a) Model this situation with FIVE inequalities.

b) Mike's objective is to make as much money as possible. He charges $50 for a lawnmower repair and $75 for a snowthrower repair. Write an equation that models his income.

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ANSWERS

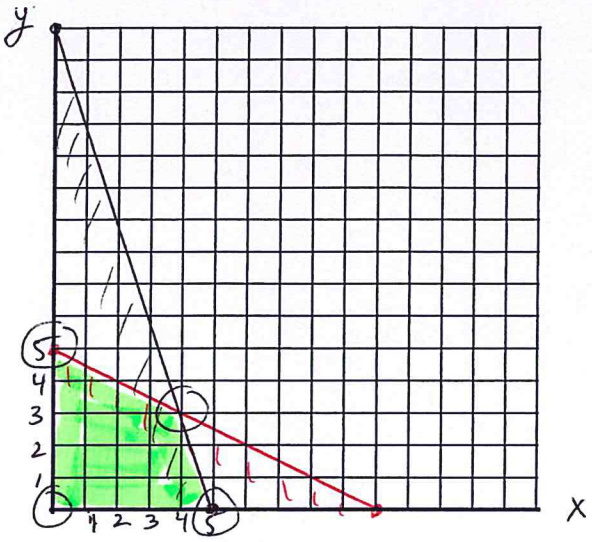
For 1 and 2:

a) Graph the given constraints (system of inequalities)

b) State the coordinates of all the vertices (corners) of the solution region.

c) Find the coordinates that Maximize or Minimize the given function.

1. $f(x) =$ $\begin{cases} 12x + 4y \le 60 & x\text{-int} = 5,\ y\text{-int} = 15 \\ 4x + 8y \le 40 & x\text{-int} = 10,\ y\text{-int} = 5 \\ x \ge 0 \\ y \ge 0 \end{cases}$ 1st quadrant



Coordinates of all Vertices:

(0,0) (5,0) (4,3) (0,5)

Which coordinates Maximize:

$P = 3x + 7y$

(0,5)

	3x+7y
(0,0)	0
5,0	15
(4,3)	33
(0,5)	35 *

2. $f(x)$ $\begin{cases} 3x + 3y \ge 18 & x\text{-int} = 6,\ y\text{-int} = 6 \\ 8x + 4y \ge 32 & x\text{-int} = 4,\ y\text{-int} = 8 \\ x \ge 0 \\ y \ge 2 \end{cases}$

Coordinates of all Vertices:

(0,8) (2,4) (4,2)

Which cooridnates Minimize:

$C = 2x + 9y$

(4,2)

	2x+9y
(0,8)	72
(2,4)	40
(4,2)	26 *

3. Mike repairs lawnmowers and snowthrowers. It takes him 2 hours to repair a lawnmower and 90 minutes to repair a snowthrower. Parts for the repairs cost $20 for each lawnmower and $35 for each snowthrower. He is trying to make money to go on a ski trip. He only has $400 to spend on parts and can spend up to 40 hours making the repairs. When he picks up the equipment to be fixed he only has room for 12 items in the back of his truck.

L = # lawnmowers S = # snowthrower

a) Model this situation with FIVE inequalities.

$L \ge 0$ $\quad 20L + 35S \le 400$

$S \ge 0$ $\quad 2L + 1.5S \le 40$

$L + S \le 12$

b) Mike's objective is to make as much money as possible. He charges $50 for a lawnmower repair and $75 for a snowthrower repair. Write an equation that models his income.

$50L + 75S = I$ I = mike's income.