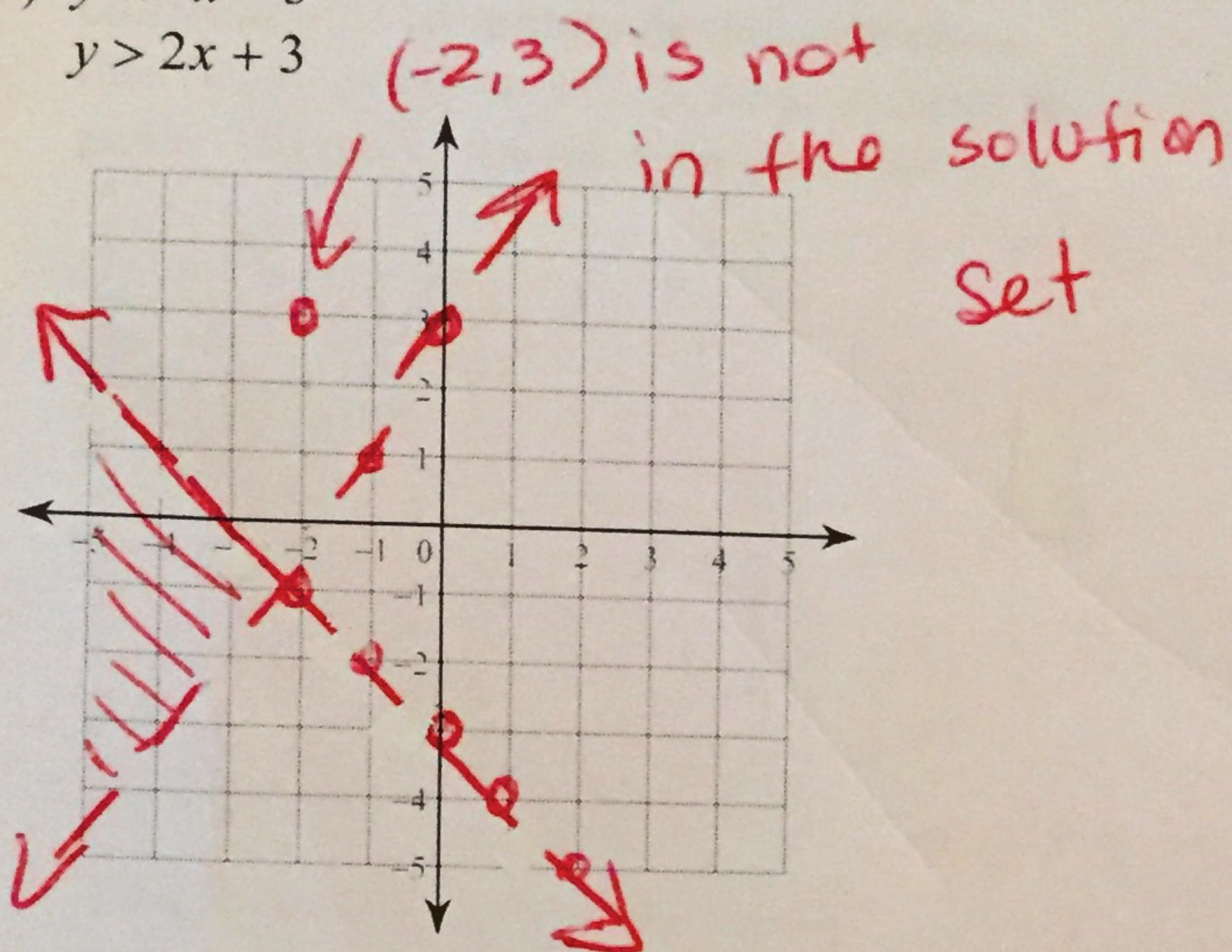


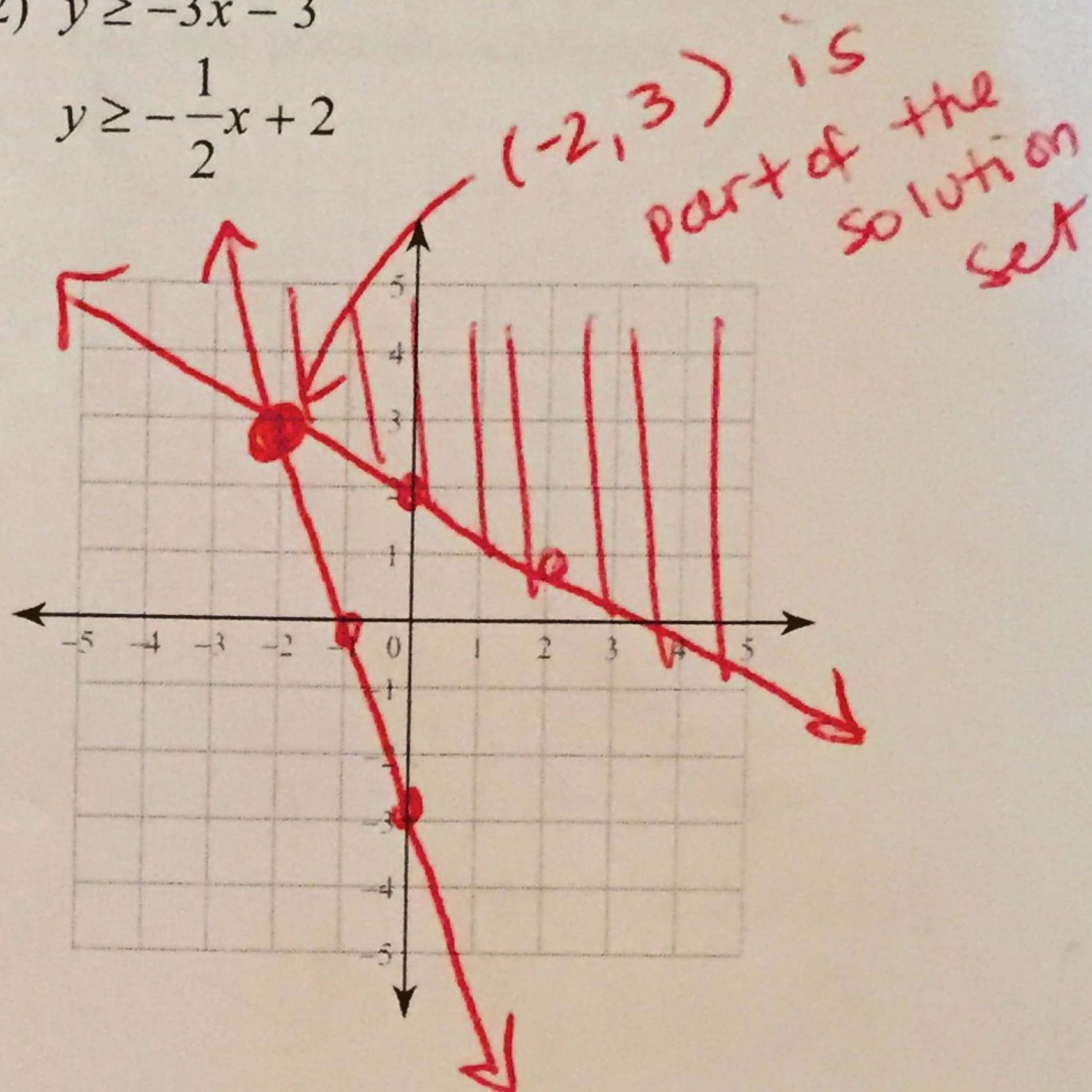
7.4--Systems of Inequalities (Word Problems)

Sketch the solution to each system of inequalities. Is the point $(-2, 3)$ a solution to each system?

1) $y < -x - 3$
 $y > 2x + 3$



2) $y \geq -3x - 3$
 $y \geq -\frac{1}{2}x + 2$



3) Graph the system:

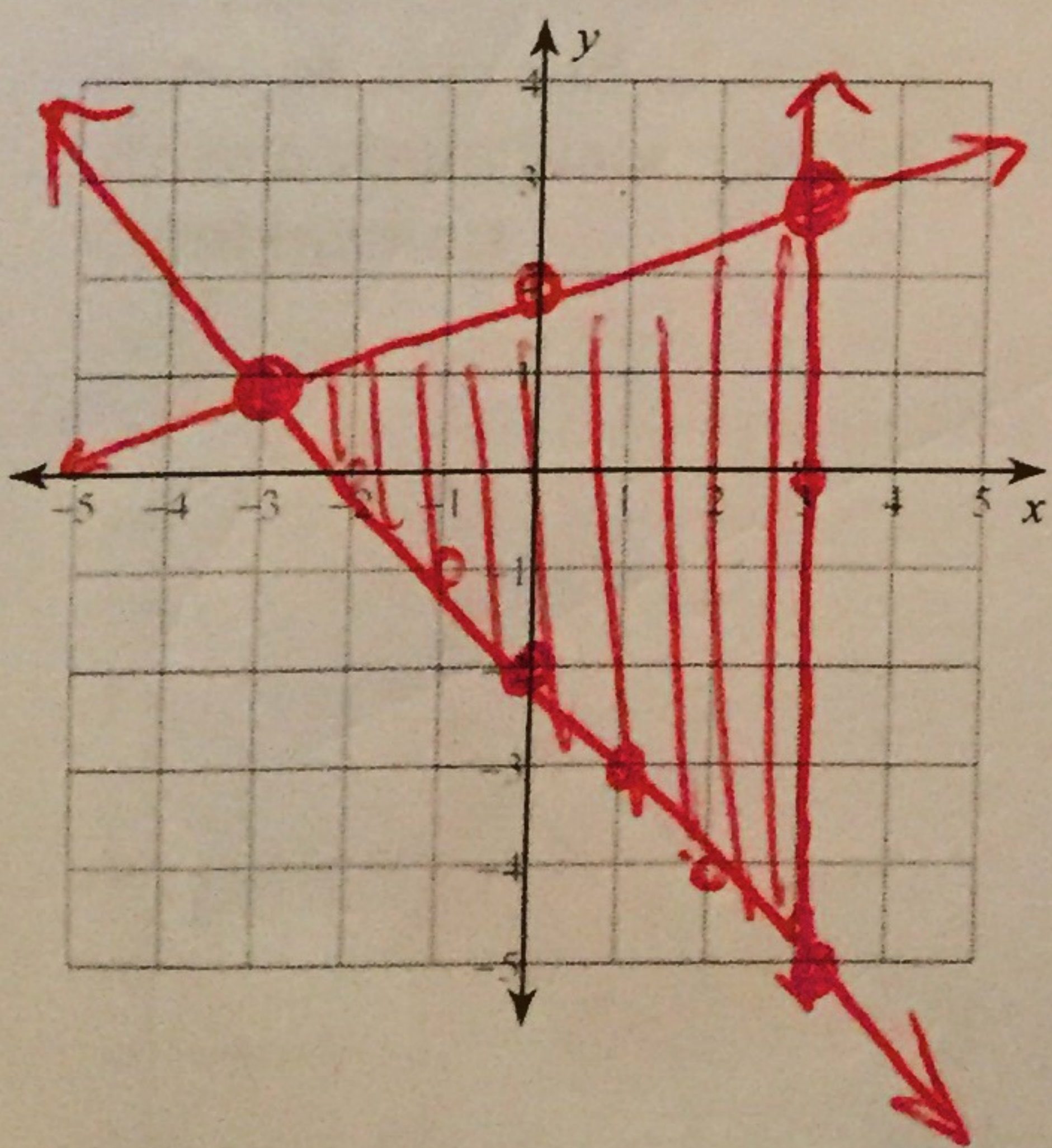
$x \leq 3$

$y \leq \frac{1}{3}x + 2$

$y \geq -x - 2$

Then find the corner points of the feasible region.

$(-3, 1)$
 $(3, 3)$
 $(3, -5)$



4) LINEAR PROGRAMMING

Graph the system:

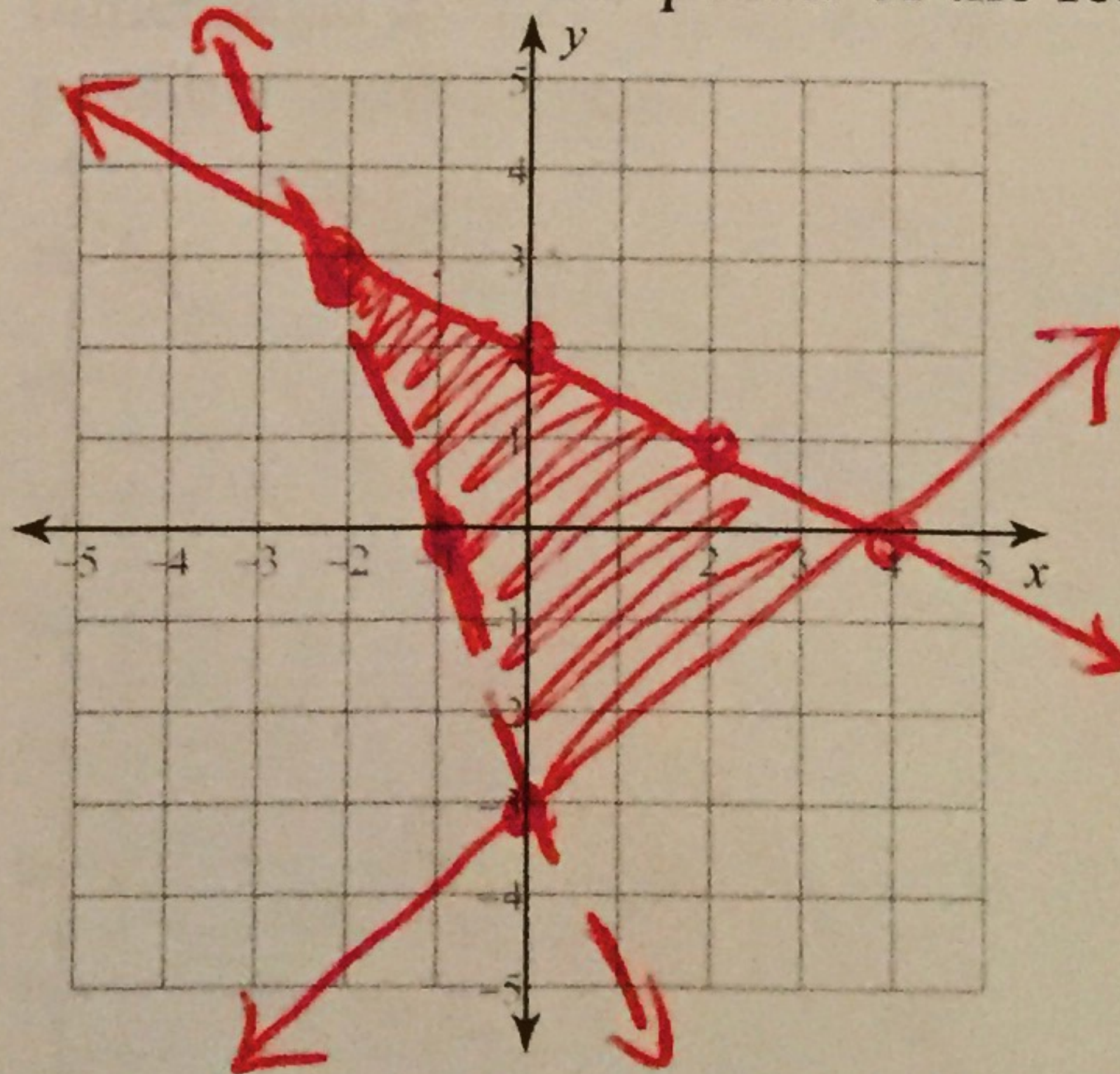
$y \geq \frac{3}{4}x - 3$

$y > -3x - 3$

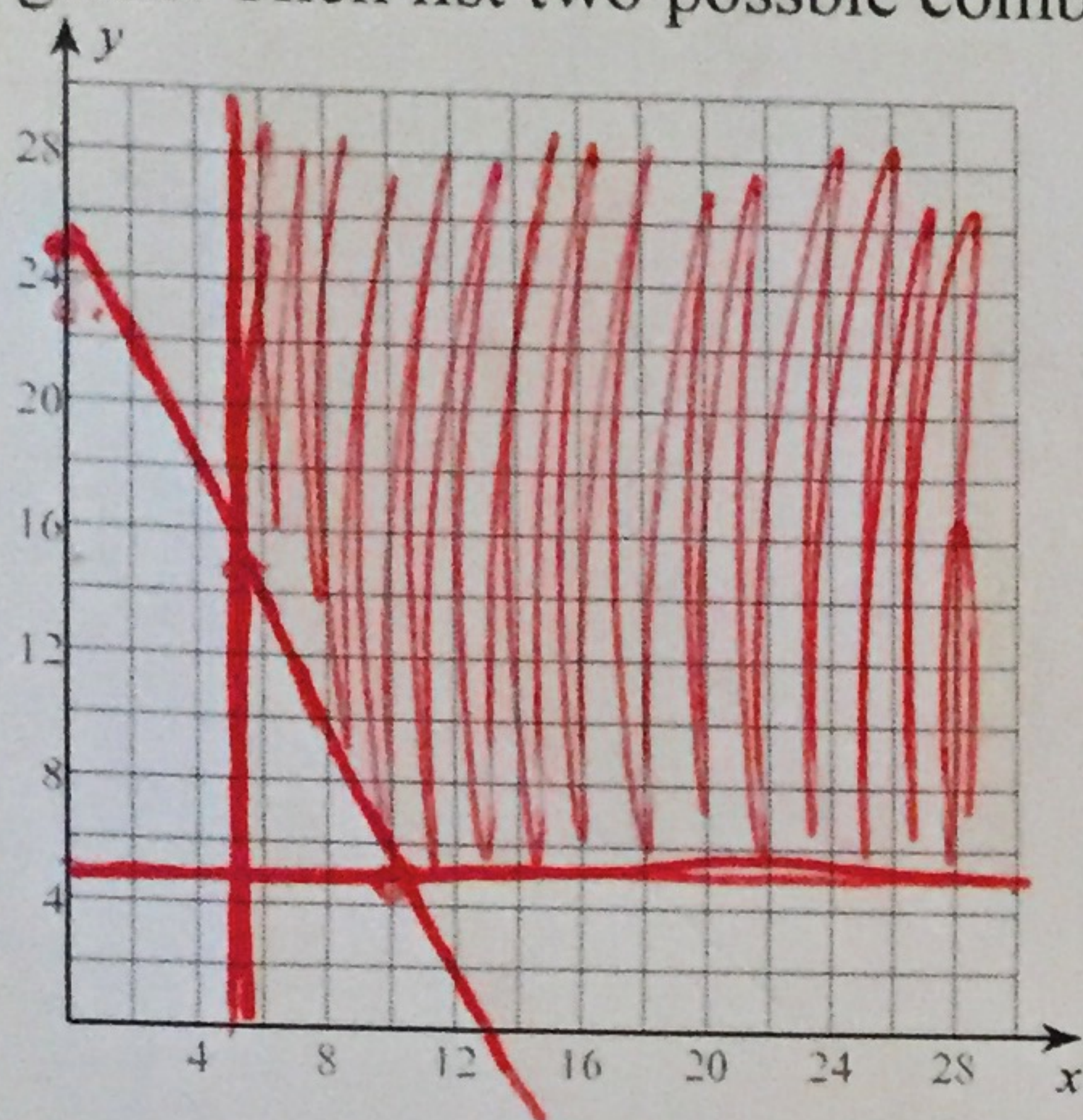
$y \leq -\frac{1}{2}x + 2$

Then find the corner points of the feasible region.

$(0, -3)$
 $(-2, 3)$
 $(4, 0)$



5) Sandy makes \$2 profit on every cup of lemonade that she sells and \$1 on every cupcake that she sells. Sandy wants to sell at least 5 cups of lemonade and at least 5 cupcakes per day. She wants to earn at least \$25 per day. Show all the possible combinations of lemonade and cupcakes that Sandy needs to sell in order to meet her goals. Then list two possible combinations.



$x = \text{lemonade}$
 $y = \text{cupcake}$

$$x \geq 5$$

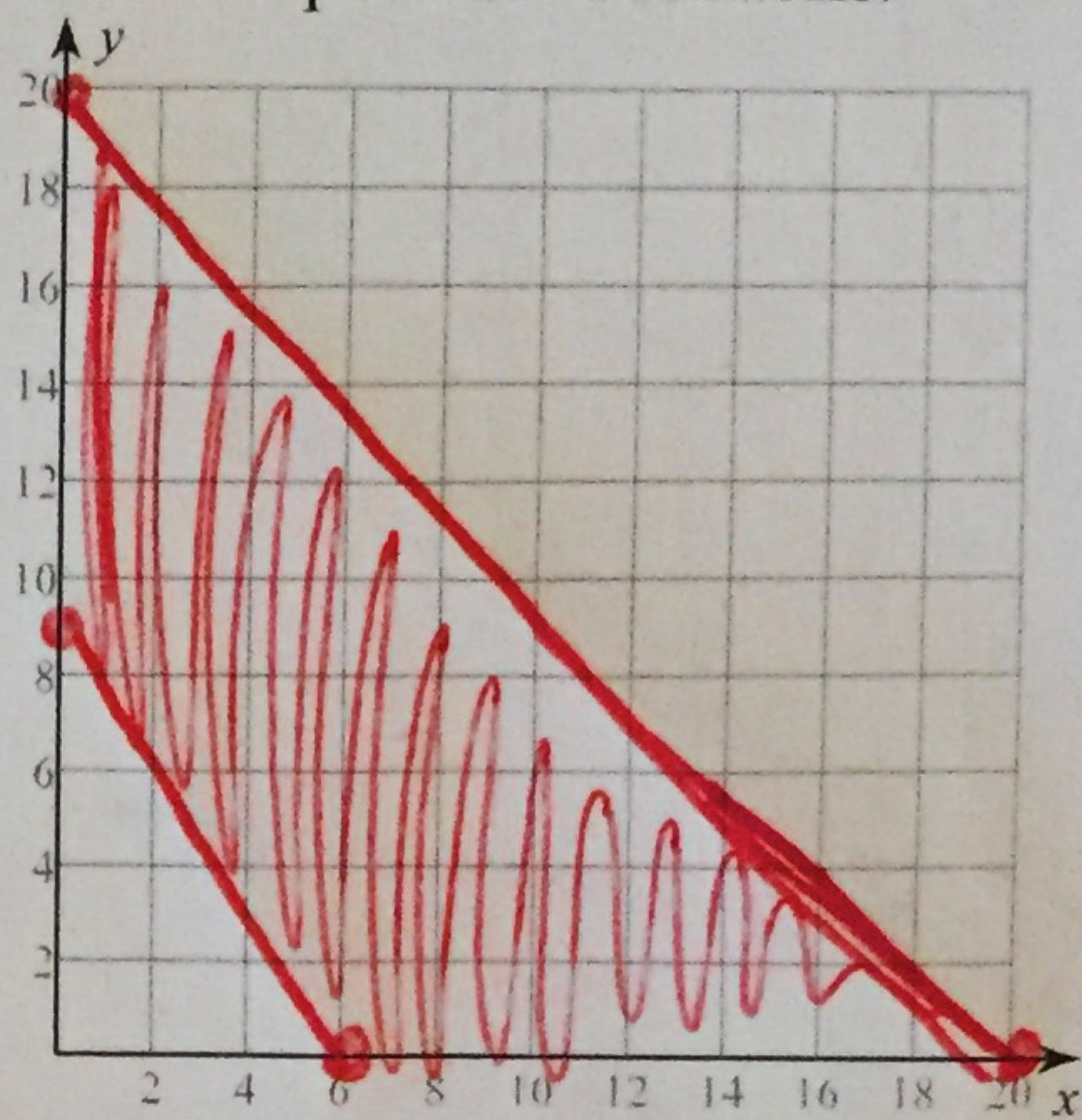
$$y \geq 5$$

$$2x + y \geq 25$$

$$y \geq -2x + 25$$

2 poss. solutions
(20, 12)
(28, 24)

6) Linda works at a pharmacy for \$15 an hour. She also baby-sits for \$10 an hour. Linda needs to earn at least \$90 per week, but she does not want to work more than 20 hours per week. Show the number of hours Linda could work at each job to meet her goals. List two possible solutions.



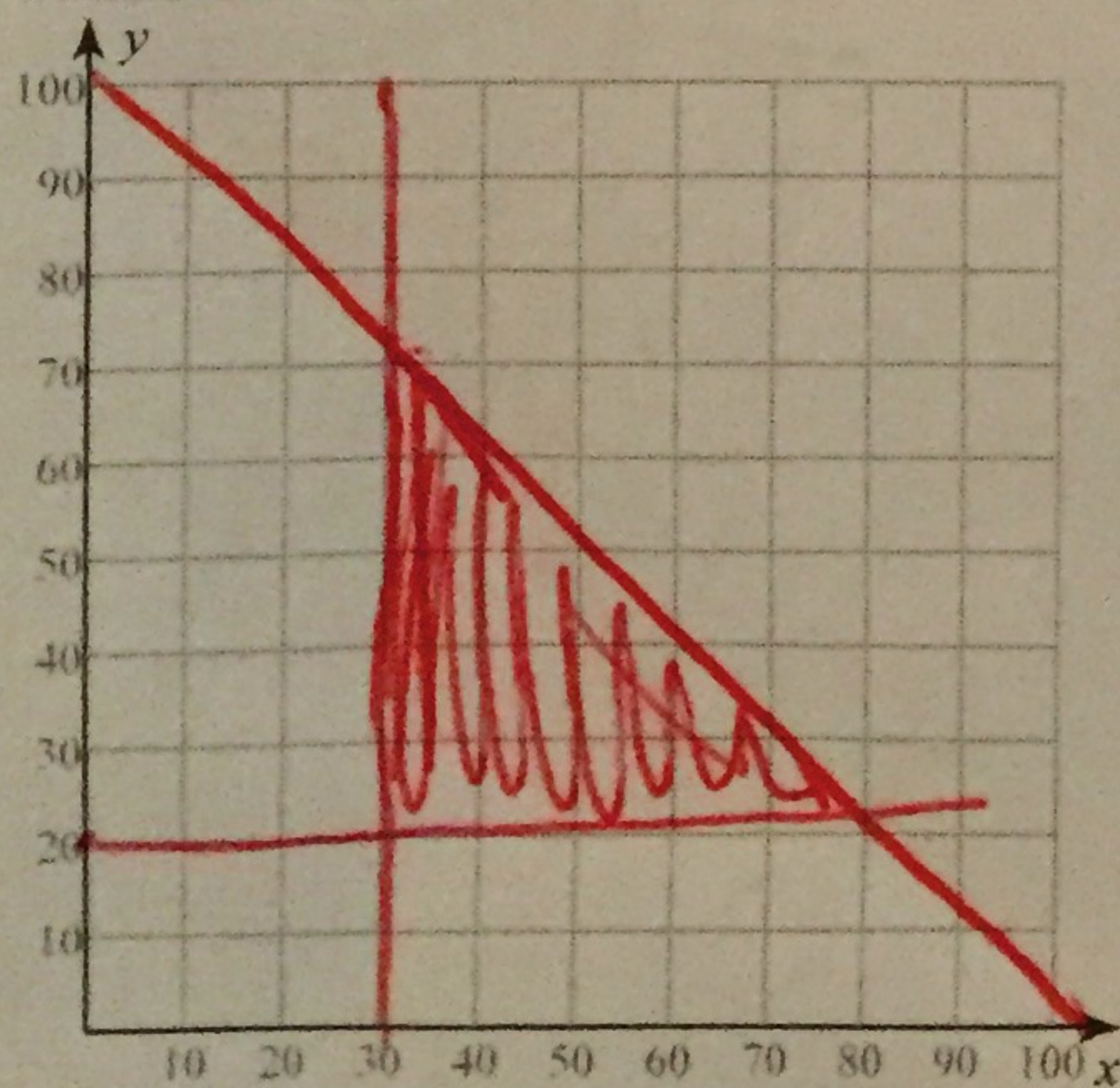
$x = \text{pharmacy}$
 $y = \text{baby-sit}$

$$15x + 10y \geq 90$$

$$x + y \leq 20$$

Poss. solutions
(8, 3), (14, 2)

7) Farmer Brown wants to plant at least 30 acres of corn and at least 20 acres of soybeans. He wants no more than 100 acres of corn and soybeans. Show and describe all the possible combinations of the number of acres of corn and of soybeans Farmer Brown could plant. List two possible combinations.



$x = \text{corn}$
 $y = \text{soybeans}$

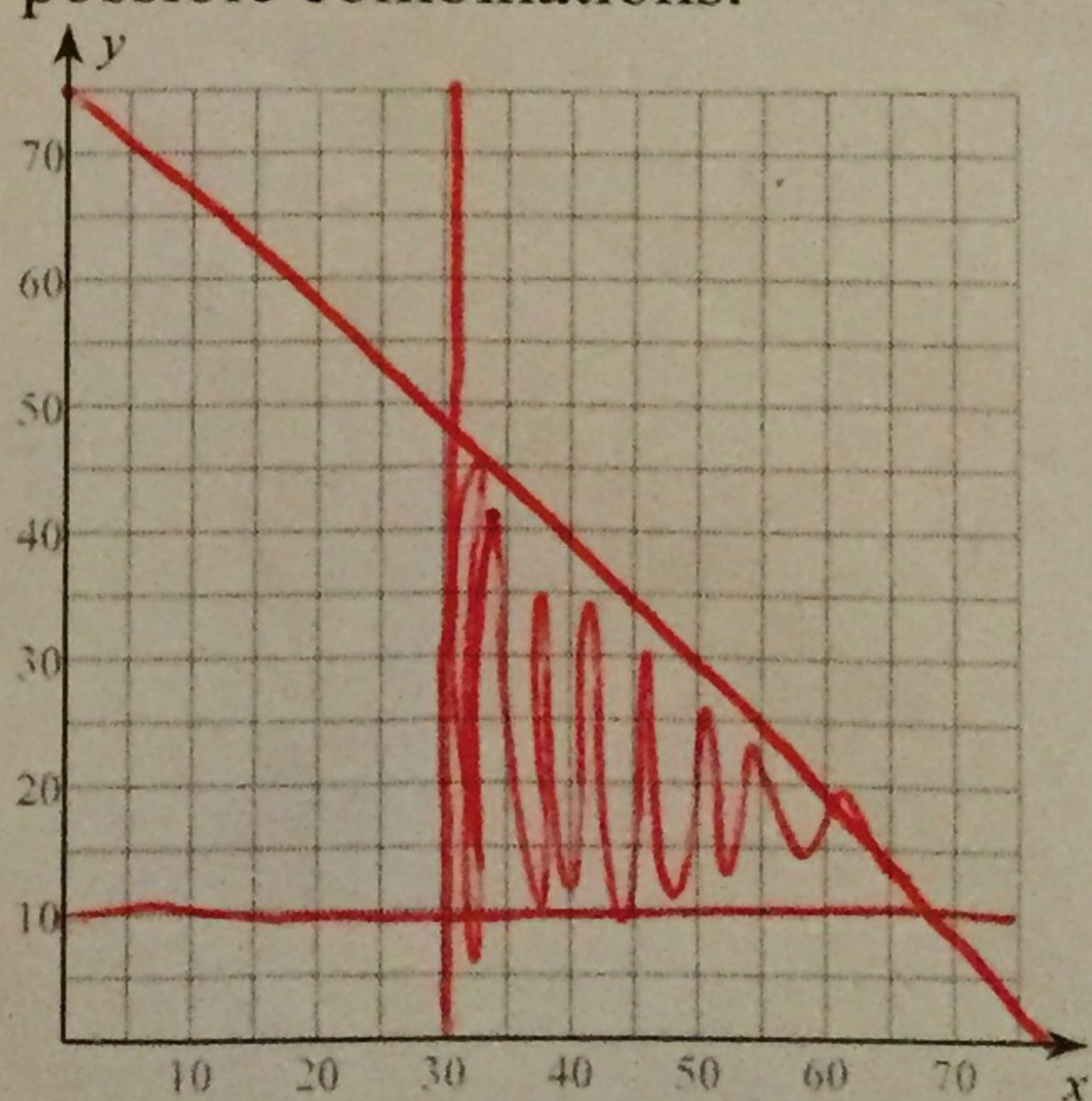
$$x \geq 30$$

$$y \geq 20$$

$$x + y \leq 100$$

Poss solutions
(40, 30)
(60, 30)

8) Butch wants to fence in a rectangular area for his dog. He wants the length of the rectangle to be at least 30 feet and the width to be at least 10 feet. Butch wants the perimeter of the fenced in area to be no more than 150 feet. Show all the possible dimensions of the rectangle. List two possible combinations.



$x = \text{length}$
 $y = \text{width}$

$$2x + 2y \leq 150$$

$$x \geq 30$$

$$y \geq 10$$

(40, 20)
(50, 25)