Pick Up the Solutions
& check answers

Let me know about HW Questions

Pick Up The Warm Up

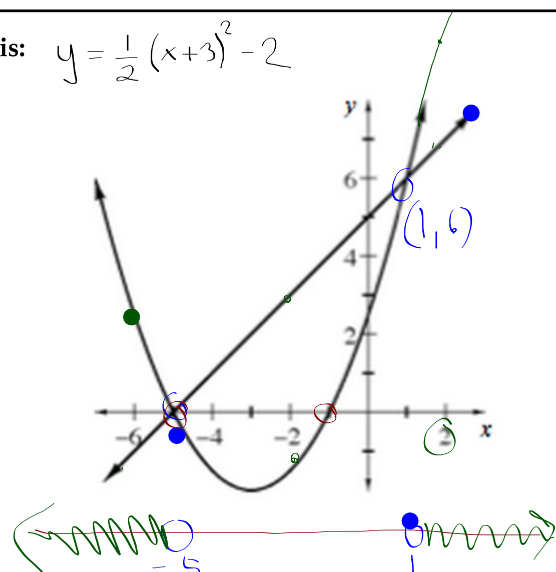
4-87 a

$x - 3(y+2) = 6$

4-87
b

a) **The equation of the parabola is:** $y = \frac{1}{2}(x+3)^2 - 2$

b) **Determine the equation of the line:** $y = x + 5$



c. Use your graph to solve $x+5=\frac{1}{2}(x+3)^2-2$.

$x = -5$
$x = 1$

d. Use your graph to solve the system:

$y=\frac{1}{2}(x+3)^2-2$

$y=x+5$

$x =$ $y =$ $(1, 6)$ $(-5, 0)$

e. Use your graph to solve the inequality $x+5 < \frac{1}{2}(x+3)^2 - 2$.

Line lower than Parabola

$x < -5$ or $x > 1$

f. Use your graph to solve $\frac{1}{2}(x+3)^2 - 2 = 0$.

$x = -5$
$x = -1$

I will not be available before or after school tomorrow.

I will be available before school on Thursday starting at 7:15 am.

[I'll also be available after school Thurs]

The faulty LCQ

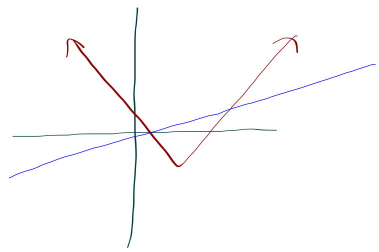
Originally Question 3 was going to be about solving an absolute value equation

$|x-3| \geq 2x-12$

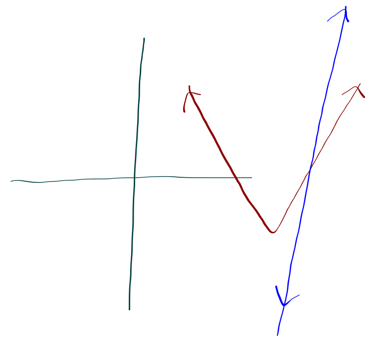
$|x-5| \geq 2x-7$

then I decided to change it to solving an inequality but I forgot to check out the solution first

$|x-3| \geq 2x-12$



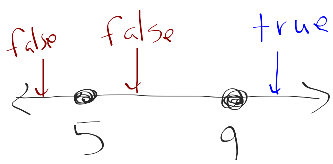
I thought I had....

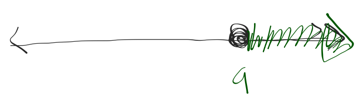


but instead I had

We did not spend enough time and look at them in depth enough for that situation

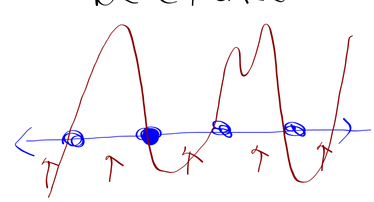
Boundary Point Method





$x \geq 9$

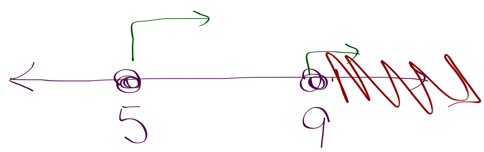
in more complex inequalities, <u>all</u> regions have to be checked



directly

↓

$x \geq 5$ <u>and</u> $x \geq 9$



then there is a misunderstanding about "solutions"

Proving if $n=3$ is a solution to an inequality

$$6n^2 + n \leq 3n^2 + 7n$$

$$6(3)^2 + 3 \leq 3(3)^2 + 7(3)$$

$$57 \leq 48$$

false

So $n=3$ is not a solution

$n \neq 3$

- See how systems of inequalities are used by businesses to help maximize profits.

(obviously a simplified version)

AIM → Use inequality constraints to solve a problem

← Start at the top of a sheet

- Need space

Read through

notes $\boxed{4-79}$ The Toy Factory

p. 191

Cars
4 wheels
2 seats
1 gas tank

Trucks
6 wheels
1 seat
3 gas tanks

Wheels	Seat	GT
36	14	15

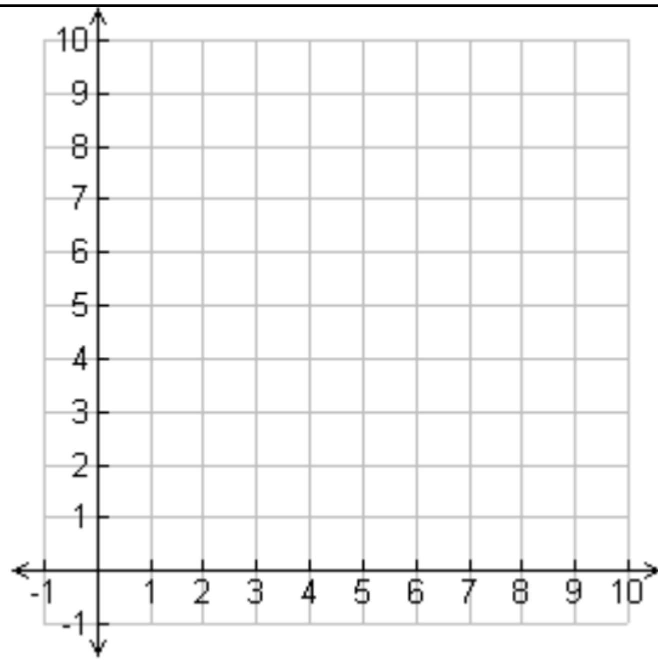
5 trucks and car

Make a list of ALL possible outcomes

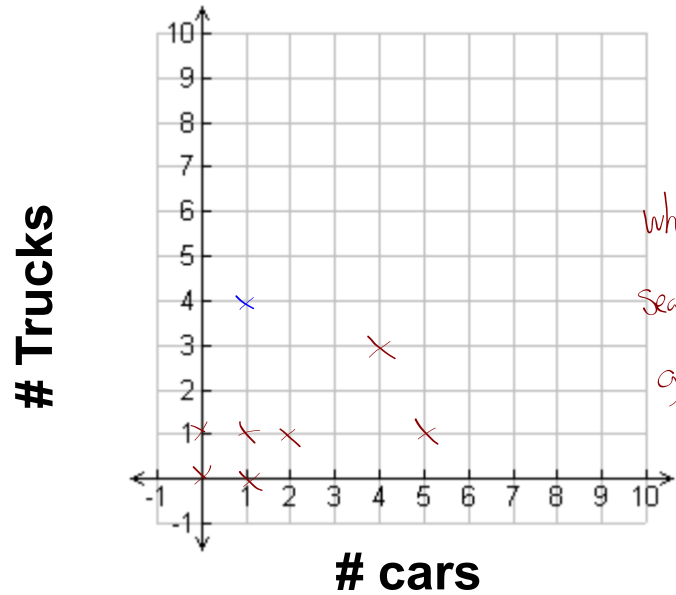
Is it possible to make

5 trucks and 1 car ?

cars, trucks
(,)



There is no obvious choice for the dependent and independent variable. The decision is arbitrary.



Cars Trucks

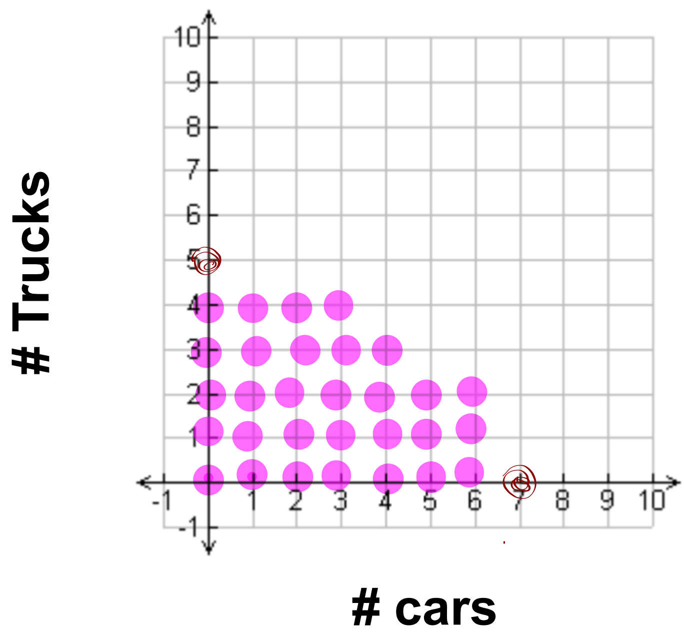
(1 , 4)

wheels $4(1)+6(4)=28$

Seats $2(1)+1(4)=6$

9 $1(1)+3(4)=13$

Go to question
4-80 b
(skip a)



3. The market has changed, and Otto can now make $2 for each truck but only $1 for each car. What is his best choice for the number of cars and the number of trucks to make in this situation? How can you be sure? Explain.

(cars, trucks)

(6, 1)

(7, 0)

(3, 4)

Profit $1 per car $2 per truck

1(6) + 2(1) = 8

1(7) + 2(0) = 7

1(3) + 2(4) = 11

don't need to do all

- find highest profit

Move to
4-81 a and b

(a) CONSTRAINTS

Wheels

$4x + 6y \le 36$

solve for y

$6y \le -4x + 36$

$y \le -\frac{4}{6}x + 6$

$y \le -\frac{2}{3}x + 6$

Seats

$2x + y \le 14$

$-2x \qquad -2x$

$y \le -2x + 14$

Tanks

$x + 3y \le 15$

$-x \qquad -x$

$3y \le -x + 15$

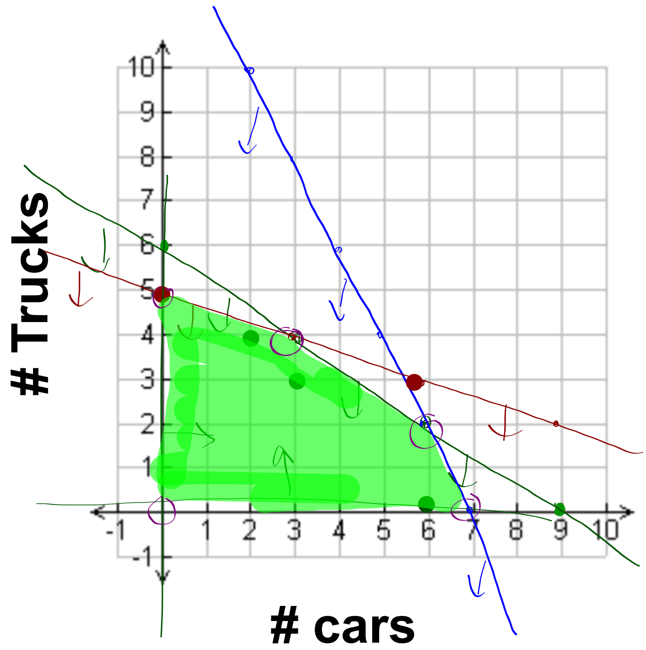
$y \le -\frac{1}{3}x + 5$

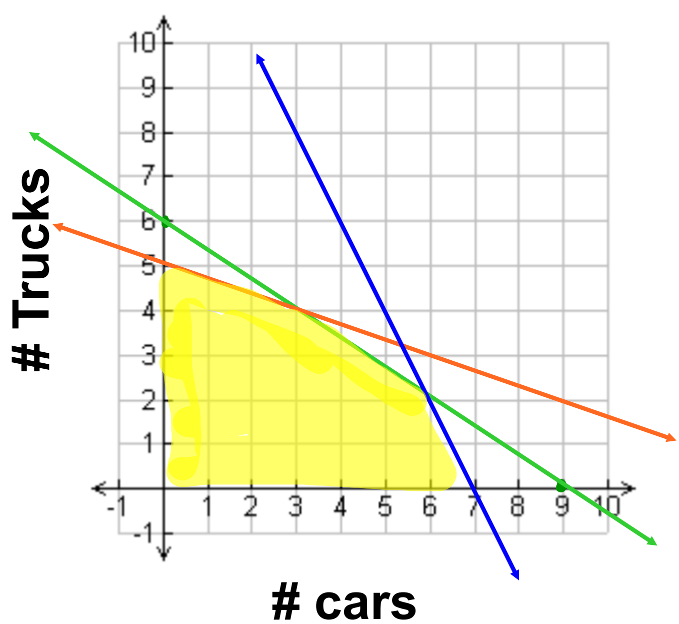
$y \le -\frac{2}{3}x + 6$
below

$y \le -2x + 14$
below

$y \le -\frac{1}{3}x + 5$

$(3, 4)$ 11



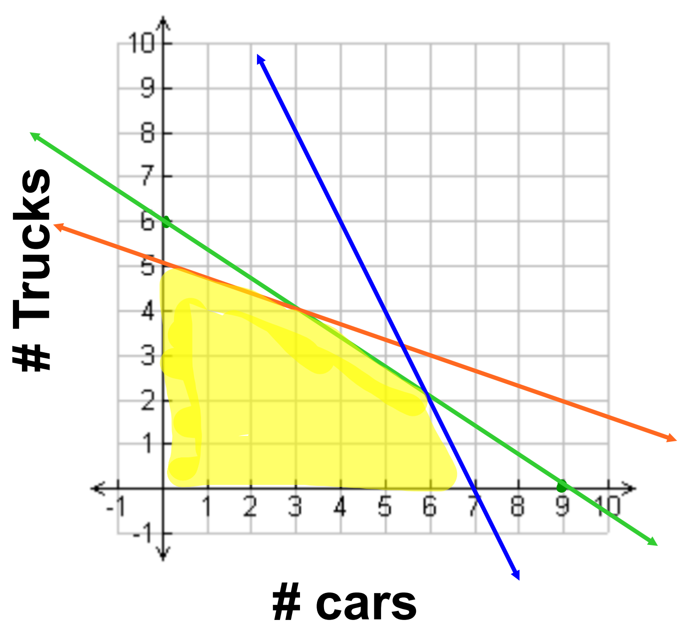


c) Vertices

d) Are there any points in the solution region that represent choices that seem more likely to give Otto the maximum profit? Where are they? Why do you think they show the best choices?

e) Write an equation to represent Otto's total profit (P) if he makes $1 on each car and $2 on each truck. What if Otto ended up with a profit of only $8? Show how to use the graph of the profit equation when P = 8 to figure out how many cars and trucks he made.

$$P = x + 2y$$



$$8 = x + 2y$$

(f) Which points do you need to test in the profit equation to get the maximum profit?
Is it necessary to try all of the points? Why or why not?

(g)

What if Otto got greedy and wanted to make a profit of $14? How could you use a profit line to show Otto that this would be impossible based on his curre pricing?

4.... 83, 85, 95, 97