Assignment # 17

Linear Programming Review for Test:

The test is clearly two parts. Part one is like problems from this review and Part 2 is dealing with matricies.

1) Solve $|3x - 18| \leq 54$

Isolate the Absolute Value

drop and solve

drop flip negate solve

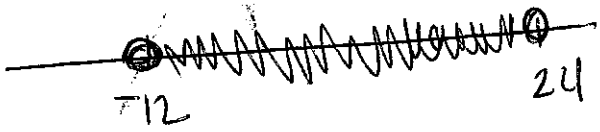
$3x - 18 \leq 54$

$x \leq 24$

$3x - 18 \geq -54$

$x \geq -12$

$-12 \leq x \leq 24$



2) $|2x + 20| \geq 532$

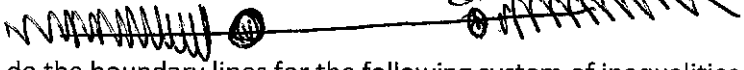
$2x + 20 \geq 532$

$x \geq 256$

$2x + 20 \leq -532$

$x \leq -276$

$x \leq -276$ or $x \geq 256$



3) At what point do the boundary lines for the following system of inequalities intersect?

$\begin{cases} 2x + 8y < 44 \\ x - y > -3 \end{cases}$

$2x + 8y = 44$

$x - y = -3$ (2)

$2x + 8y = 44$

$-2x + 2y = -6$

$10y = 50$

$y = 5$

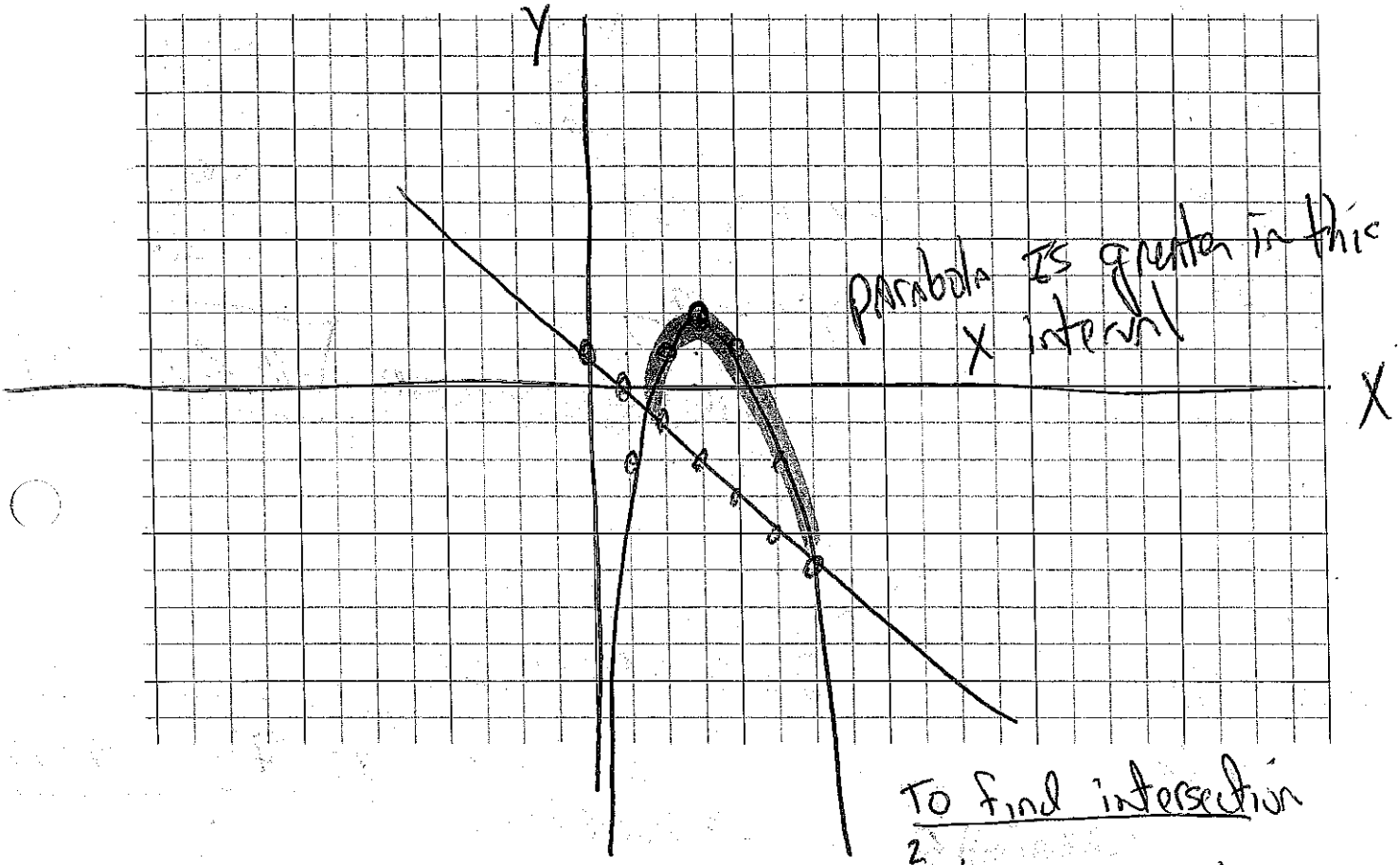
$x - 5 = -3$

A.	B.	C.	D.
$(-4, 1)$	$(2, 5)$	$(-6, 18)$	$(4, 5)$

For the following 2 problems first make a graph showing the parabola and the line. Then use your graph to interpret the answer that you are looking for.

$\frac{-6}{-2} = (3, 2)$

3) $-x^2+6x-7 > -x+1$



To find intersection

$-x^2+6x-7 = -x+1$

$-x^2+7x-8=0$

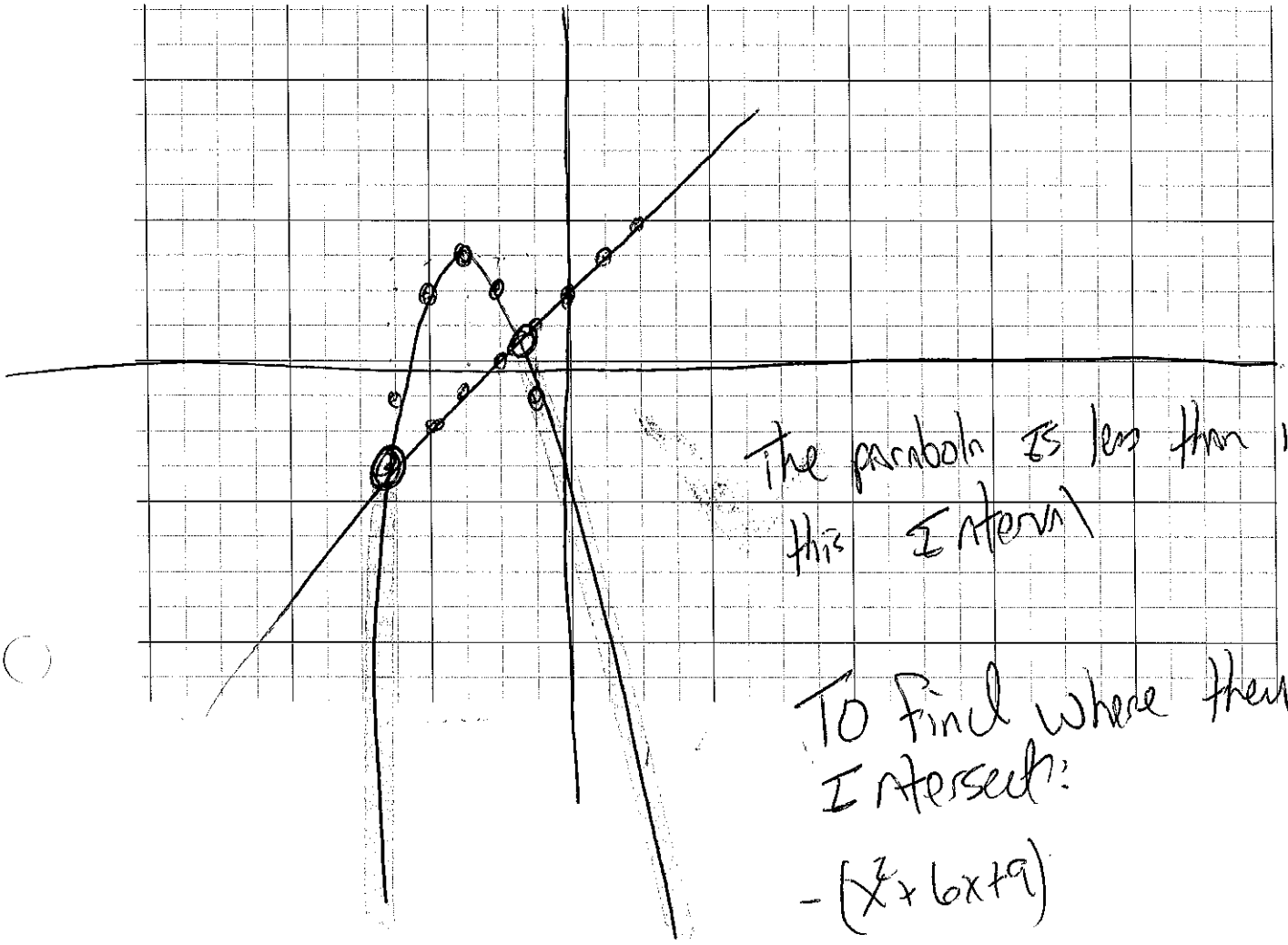
$-(x^2-7x+8)=0$

1.59 4.41

Answer to where $-x^2+6x-7 > -x+1$

$1.59 < X < 4.41$

4) $-(x+3)^2+3<x+2$



The parabola is less than in this interval

To find where they intersect:

$-(x^2+6x+9)$

$-x^2-6x-9+3$

$-x^2-6x-6=x+2$

$-x^2-7x-8=0$

$-1.44 \quad -5.56$

Answers to where

$-(x+3)^2+3<x+2$

$x<-5.56$ or $x>-1.44$

6) What is the intersection of $\begin{cases} x + y \leq 9 \\ 2x - y \geq 3 \end{cases}$

(4, 5)

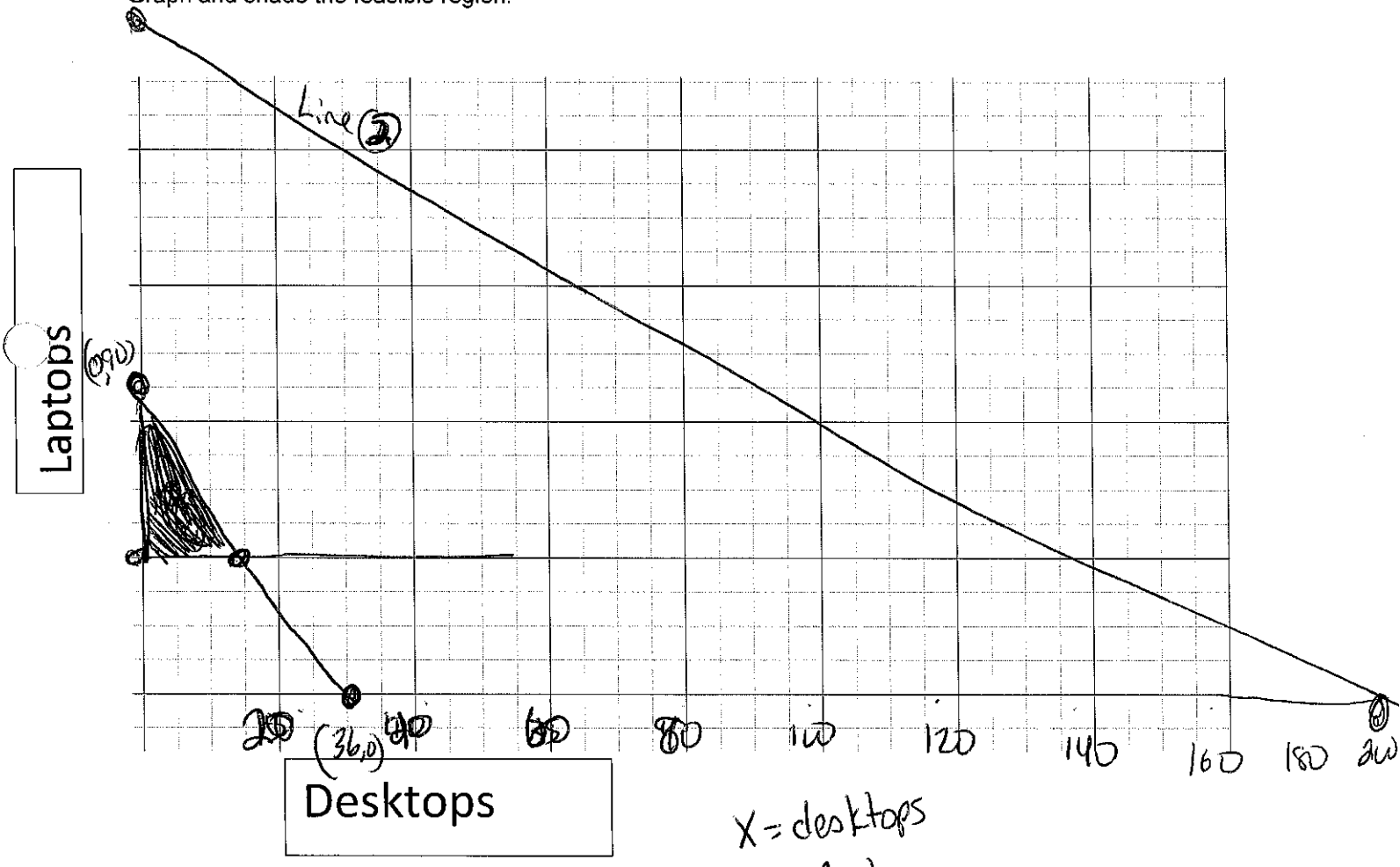
$x + y = 9$

$2x - y = 3$

$3x = 12$

$x = 4$

7) I am selling computers. Desktops and laptops.
I am in charge of inventory at Best buy. I need to make sure to maximize what I can hold in the store. I will be stocking laptops and desktops. Each laptop costs $200 and each desktop costs $500. I have $18,000 to spend in total. I have room for 200 items all together. I have to have in stock at least 50 laptops or I get in trouble. I don't want to get in trouble ☹
Graph and shade the feasible region.



X = desktops

y = laptops

My constraints

① $500x + 200y \leq 18{,}000$ (36,0) (0,90)

$x + y \leq 200$ (200,0) (0,200)

$y \geq 50$ Horizontal

5) Shade to find the correct feasible region.

$$\begin{cases} y \geq x^2 - 6x + 7 \\ y \leq |x - 2| \end{cases}$$

$\frac{6}{2}$ (3, -2)