Bye-Bye Shot on Test 3-4 stuff:

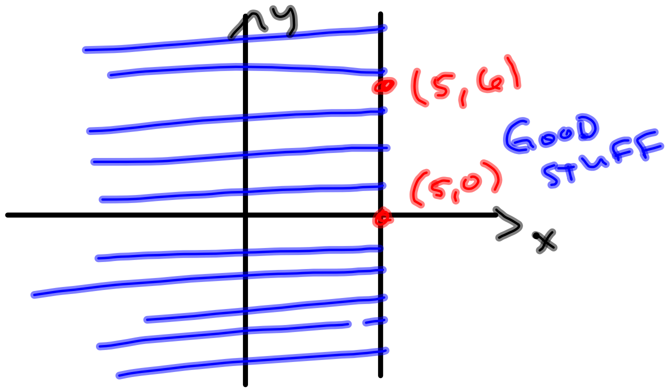
I will arrange a re-take of some sort, after Thanksgiving break.
Grade Replacement or split the difference or...

Graph the System of inequalities:

TEACHER SCRATCHES out the Bad Stuff
Book shades the good stuff.
My way makes the feasible region more clear.

$x \geq 5$

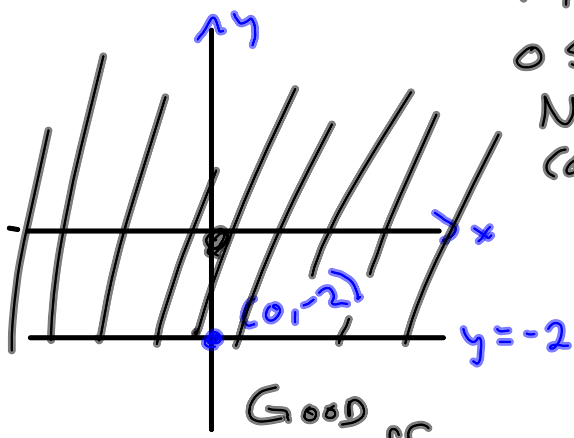
Linear Inequality divides the plane into 2 half-planes.



$x=5$ is the boundary

$y \leq -2$

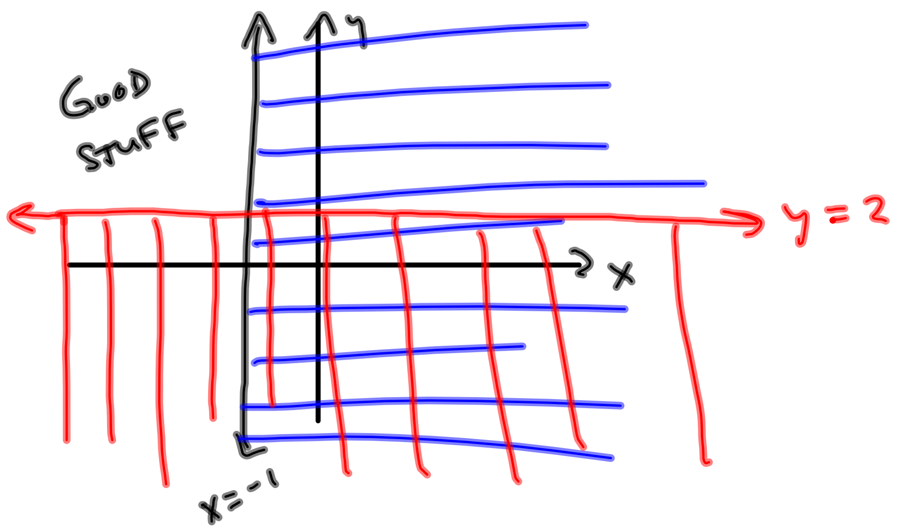
TEST:
(0,0)
$0 \leq -2$?
No
(0,0) Bad



GOOD stuff

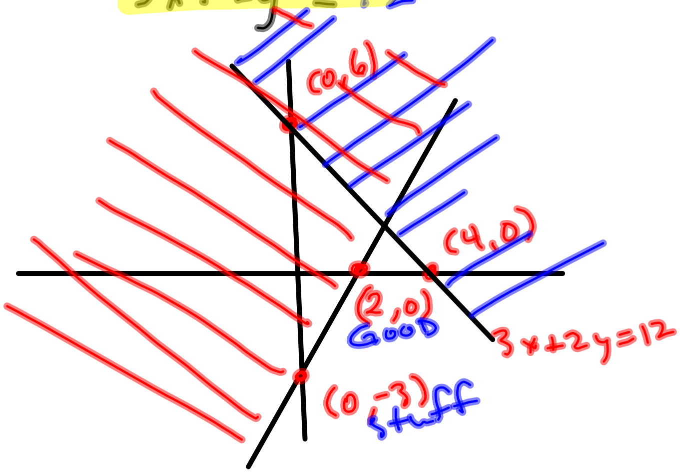
$x \leq -1$

$y \geq 2$



$3x - 2y \geq 6$

$3x + 2y \leq 12$



$Ax + By = C$

$3x + 2y \leq 12$

x	y
0	6
4	0

(0,0):

$0 \leq 12$?

Yes

(0,0) Goo

Jazzan

Like

$3x - 2y \geq 6$

x	y
0	-3
2	0

$0 \geq 6$?

No.

(0,0) Ba

Teacher Scratch

$(x_1, y_1) = (0, -3)$

$(x_2, y_2) = (2, 0)$

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0+3}{2-0} = \frac{3}{2}$

$y = m(x - x_1) + y_1$

$y = \frac{3}{2}(x - 0) + -3$

$y = \frac{3}{2}x \quad -3$

$y = \frac{3}{2}x - 3$

$2y = 3x - 6$

$-3x + 2y = -6$

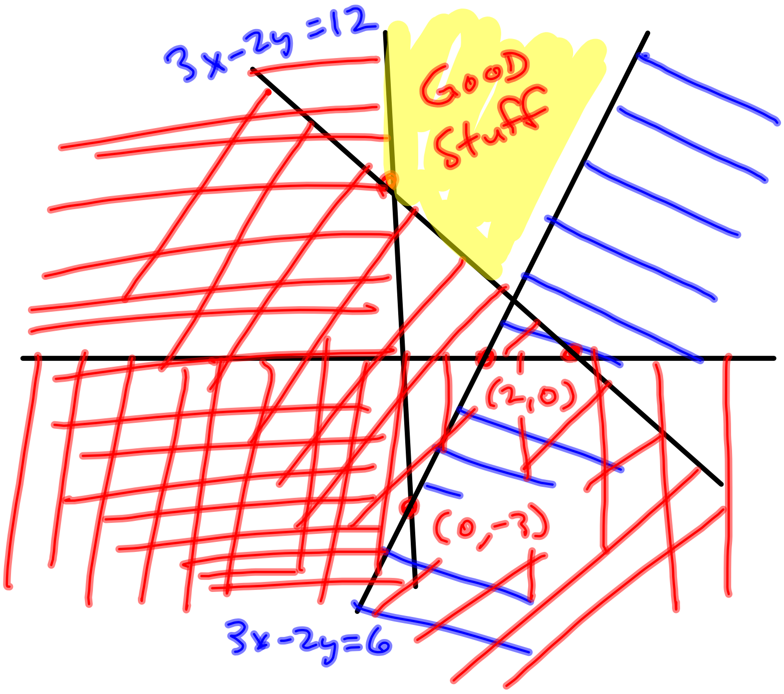
$3x - 2y = 6$

$3x - 2y \leq 6$

$3x + 2y \geq 12$

$x \geq 0$

$y \geq 0$



$3x - 2y \leq 6$

x	y
0	-3
2	0

$0 \leq 6$?

Yes (0,0) Good

$3x + 2y \geq 12$

x	y
0	6
4	0

$0 \geq 12$?

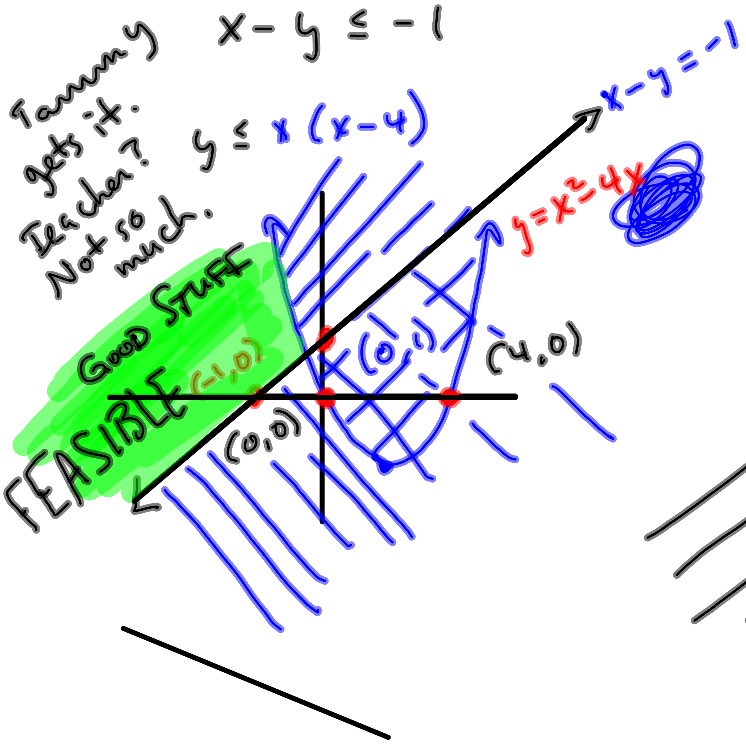
No

(0,0) Bad

$y \le x^2 - 4x$ GOOD STUFF BELOW the boundary

Tammy $x - y \le -1$
gets it.
Teacher?
Not so
much.

$y \le x(x-4)$



$x - y \le -1$

x	y
0	1
-1	0

$0 \le -1$?

NO,
(0,0) Bad

Test 5: FRIDAY

The Chapter 6 material is nothing new. Just Chapter 5 with matrices.

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} = A \qquad 3A = \begin{bmatrix} 3 & 6 & 9 \\ 12 & 15 & 18 \end{bmatrix}$$

2x3

R C
o o
w L
s s

$$\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

3 x 1

Addition: Must be the same size.

① Solve the linear system & set up the system is what I really want from next test.

② Graph the system of inequalities.

③ Nonlinear systems. Solve.

On Test, Gaussian Elimination will suffice. Gauss-Jordan is optional.

Gauss:

$$\left[\begin{array}{ccc|c} 1 & A & B & D \\ 0 & 1 & C & E \\ 0 & 0 & 1 & F \end{array}\right]$$

Now, back-substitute from $z=F$

Gauss-Jordan

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & A \\ 0 & 1 & 0 & B \\ 0 & 0 & 1 & C \end{array}\right] \quad \begin{array}{l} x=A \\ y=B \\ z=C \end{array}$$

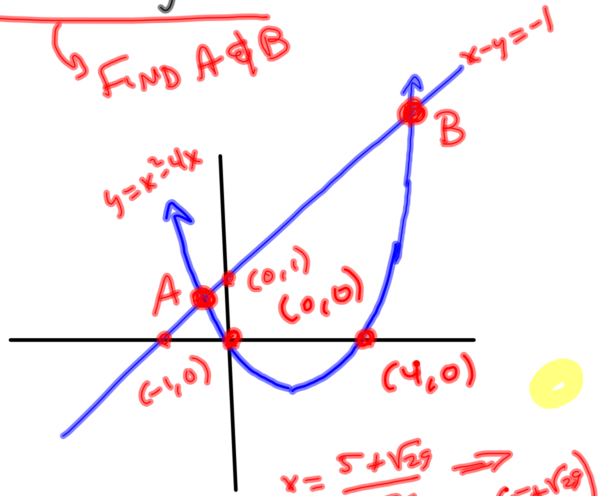
So, $x=A$
$y=B$
$z=C$

Nov 11-8:34 AM

Solve the system:

Find A & B

$$y = x^2 - 4x$$
$$x - y = -1$$



$$x - (x^2 - 4x) = -1$$
$$x - x^2 + 4x = -1$$
$$-x^2 + 5x = -1$$
$$x^2 - 5x = +1$$
$$x^2 - 5x - 1 = 0$$

$$x^2 - 5x = 1$$
$$x^2 - 5x + \left(\frac{5}{2}\right)^2 = 1 + \frac{25}{4} = \frac{4+25}{4} = \frac{29}{4}$$

$$\left(x - \frac{5}{2}\right)^2 = \frac{29}{4}$$
$$x - \frac{5}{2} = \pm\sqrt{\frac{29}{4}} = \pm\frac{\sqrt{29}}{\sqrt{4}} = \pm\frac{\sqrt{29}}{2}$$
$$x = \frac{5}{2} \pm \frac{\sqrt{29}}{2}$$

$$x = \frac{5+\sqrt{29}}{2} \Longrightarrow$$
$$y = \left(\frac{5+\sqrt{29}}{2}\right)^2 - 4\left(\frac{5+\sqrt{29}}{2}\right)$$

$\left(x - \left(\frac{5}{2} + \frac{\sqrt{29}}{2}\right)\right)\left(x - \left(\frac{5}{2} - \frac{\sqrt{29}}{2}\right)\right)$, is how it factors, by the FACTOR THEOREM, which is simply the REMAINDER THEOREM in the happy circumstance of a zero remainder.

$$y = x^2 - 4x =$$

$$y = \left(\frac{5+\sqrt{29}}{2}\right)^2 - 4\left(\frac{5+\sqrt{29}}{2}\right) \qquad y = \left(\frac{5-\sqrt{29}}{2}\right)^2 - 4\left(\frac{5-\sqrt{29}}{2}\right)$$

$$= \frac{5^2 + 10\sqrt{29} + 29}{4} - \frac{20 + 4\sqrt{29}}{2}$$

$$= \frac{\cancel{54}^{27} + \cancel{10}^{5}\sqrt{29}}{\cancel{4}_{2}} - \frac{20 + 4\sqrt{29}}{2}$$

$$= \frac{27 + 5\sqrt{29} - 20 - 4\sqrt{29}}{2}$$

$$= \frac{7 + \sqrt{29}}{2}$$

$$\boxed{\left(\frac{5+\sqrt{29}}{2}, \frac{7+\sqrt{29}}{2}\right) = B}$$