

HONORS 7.6T GRAPHING INEQUALITIES WITH 3+ INEQUALITIES

Name: KEY

Date: _____

Period: _____

INSTRUCTIONS:

- Clearly graph inequalities. Show point tested for each inequality.
- Double underline any inequalities you had to convert to $y=mx+b$
- Draw Arrow to Solution Region (label SR) and select a point in the SR and test all original inequalities to confirm they are all in the SR

SYSTEMS OF THREE OR MORE INEQUALITIES Graph the system of linear inequalities.

39. $y > -8$
 $x < 8$
 $y \geq x-4$

40. $y \geq -3$
 $x \leq 10$
 $-y > -x+5$

41. $2x - 3y > -6$
 $5x - 3y < 3$
 $y \geq -4$

42. $x - 4y > 0$
 $x + y \leq 1$
 $x + 3y > -12$

43. $2x + 1 \geq y$
 $x < 5$
 $y < x + 2$

44. $5x - 3y \leq 6$
 $x + y < 8$
 $y > 3$

45. $x \geq y - 2$
 $x + y > 1$
 $x < 10$

46. $y > x$
 $y \leq -1/4x+5$
 $y \geq 0$

47. $x - y \geq 10$
 $y < 2$
 $5x + 6y \geq 12$

48. $y \geq 6$
 $x \leq 9$
 $x + y < 14$
 $y < x + 6$

49. $x + y \leq 4$
 $x + y \geq -4$
 $x - y \geq -2$
 $x - y \leq 2$

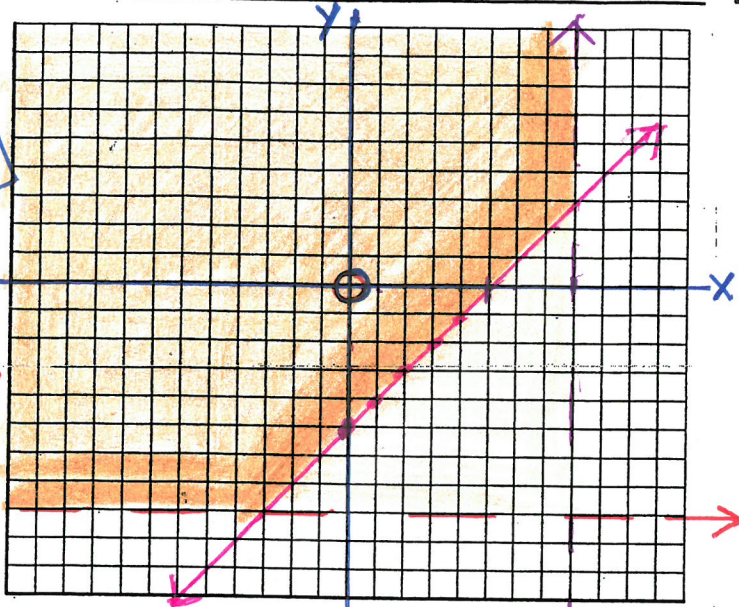
50. $y < 5$
 $y > -6$
 $y \leq x + 3$
 $-2x + y \geq -6$

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39

SR



$$y > -8 \quad x < 8 \quad y \geq x - 4$$

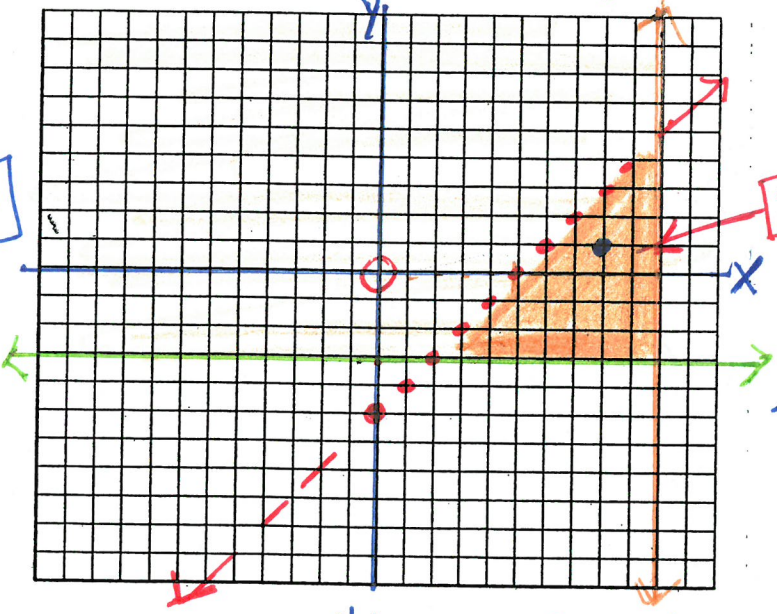
$T(0,0)$
 $0 > -4T$

Check a point in SR: (0,0)

- $C: 0 > -8 \text{ (T)}$
- $C: 0 < 8 \text{ (T)}$
- $C: 0 \geq -4 \text{ (T)}$

40

SR



$$y \geq 1 \quad x \leq 10$$

$$\frac{-y \geq -x + 5}{-1} \quad \frac{-1}{-1} \quad \frac{-1}{-1}$$

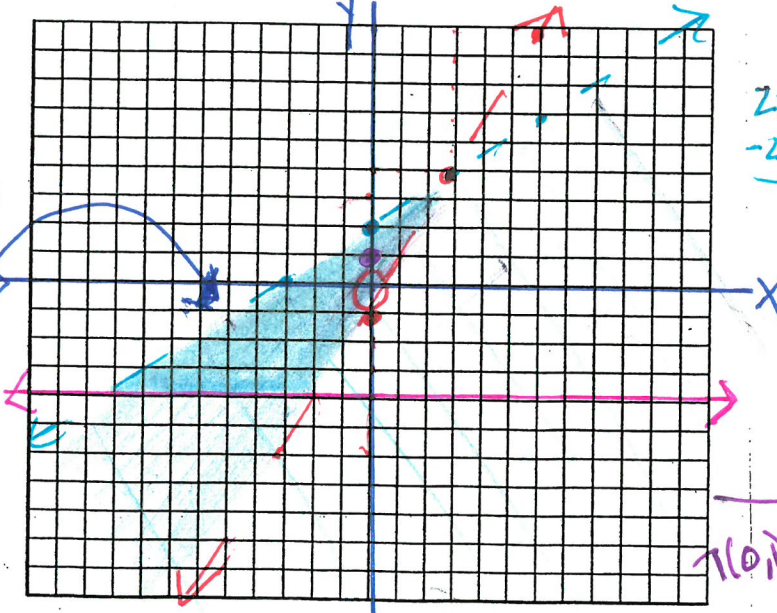
$$y \leq x - 5$$

$T(0,0) 0 > 5 \text{ (F)}$

- $T(8,1)$
- $C: 1 \geq -3 \text{ (T)}$
- $C: 8 \leq 10 \text{ (T)}$
- $C: -1 \geq -3 \text{ (T)}$

41

SR



$$\frac{2x - 3y > -6}{-2x} \quad \frac{-2x}{-2x}$$

$$\frac{-3y}{-3} > \frac{-2x - 6}{-3} \quad \frac{-3}{-3} \quad \frac{-3}{-3}$$

$$y < \frac{2}{3}x + 2$$

$$5x - 3y < 3 \quad y \geq -4$$

$$\frac{-3y}{-3} < \frac{-5x + 3}{-3} \quad \frac{-3}{-3} \quad \frac{-3}{-3}$$

$$y > \frac{5}{3}x - 1$$

$T(0,0) 0 > -6 \text{ (T)}$

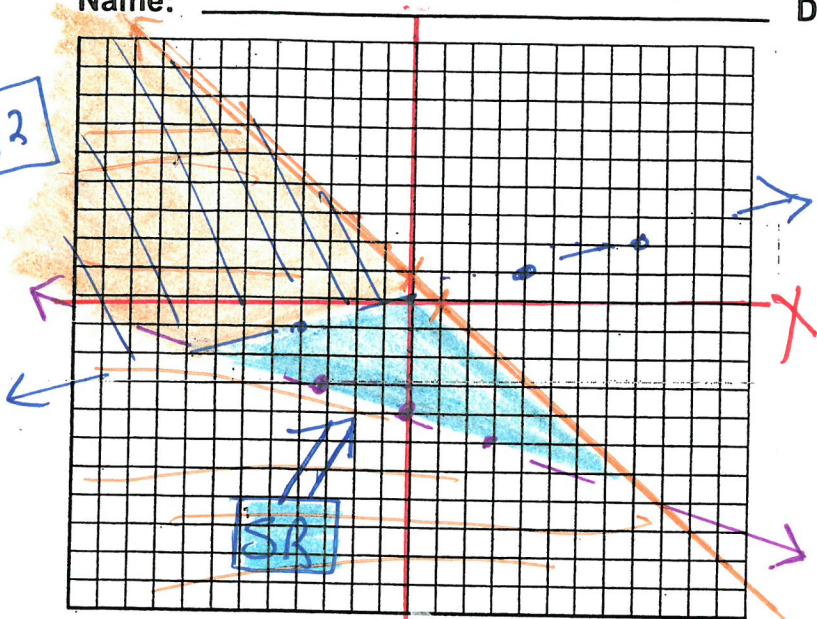
$T(0,0) 0 < 3 \text{ (T)}$

- $T(0,0) \rightarrow C: 0 > -6 \text{ (T)}$
- $\rightarrow C: 0 < 3 \text{ (T)}$
- $\rightarrow C: 1 \geq -4 \text{ (T)}$

Name: _____

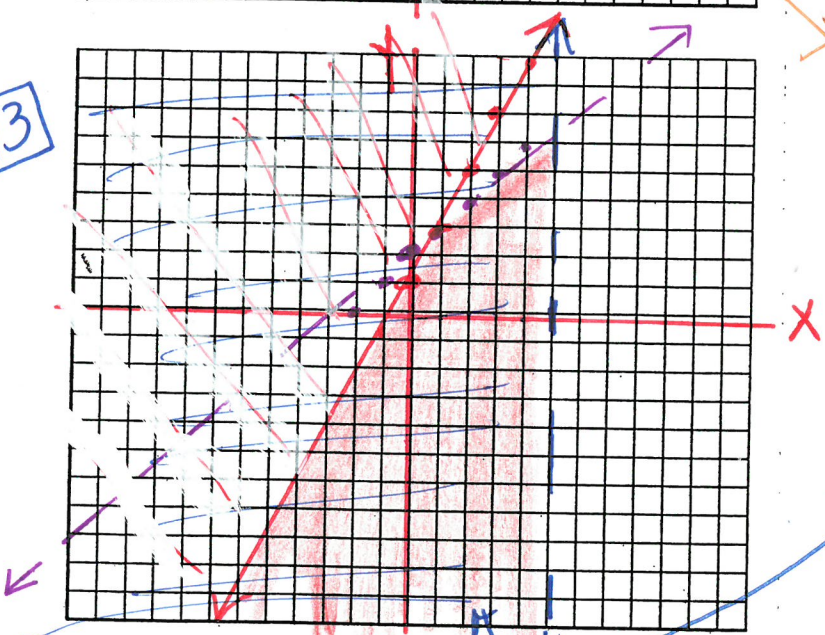
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42



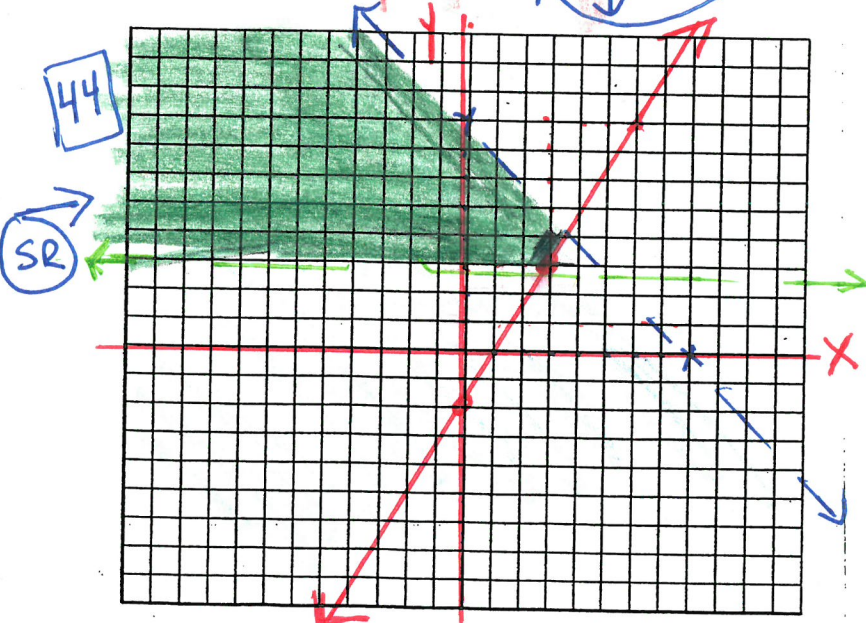
$$\begin{array}{l}
 x+y \leq 1 \\
 x-4y > 0 \\
 x: 1 \\
 y: 1 \\
 T(0,0) \\
 0 \leq 1T
 \end{array}
 \quad
 \begin{array}{l}
 \frac{x-4y > 0}{-x} \\
 \frac{-4y > -x}{-4} \\
 y < \frac{1}{4}x \\
 T(2,2) \\
 -6 > 0F
 \end{array}
 \quad
 \begin{array}{l}
 x+3y > -12 \\
 -x \quad 0 \quad -x \\
 \frac{3y > -x-12}{3} \\
 y > \frac{-x-12}{3} \\
 T(0,0) \\
 0 > -12T
 \end{array}$$

43



$$\begin{array}{l}
 x \leq 5 \\
 y \leq 2x+1 \\
 T(0,0) \\
 0 \leq 1T
 \end{array}
 \quad
 \begin{array}{l}
 y < -x+2 \\
 T(0,0) \\
 0 < 2T
 \end{array}$$

44

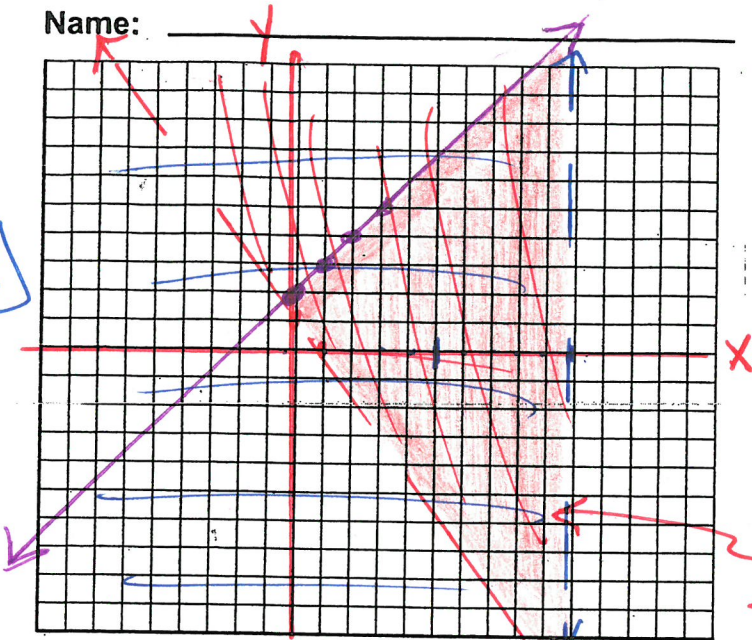


$$\begin{array}{l}
 x+y < 8 \\
 T(0,0) \\
 0 < 8T
 \end{array}
 \quad
 \begin{array}{l}
 y > 3 \\
 5x-3y \leq 6 \\
 -5x \quad -5x \\
 \frac{-3y \leq -5x+6}{-3} \\
 y \geq \frac{5}{3}x-2 \\
 T(0,0) \\
 0 \leq 6T
 \end{array}$$

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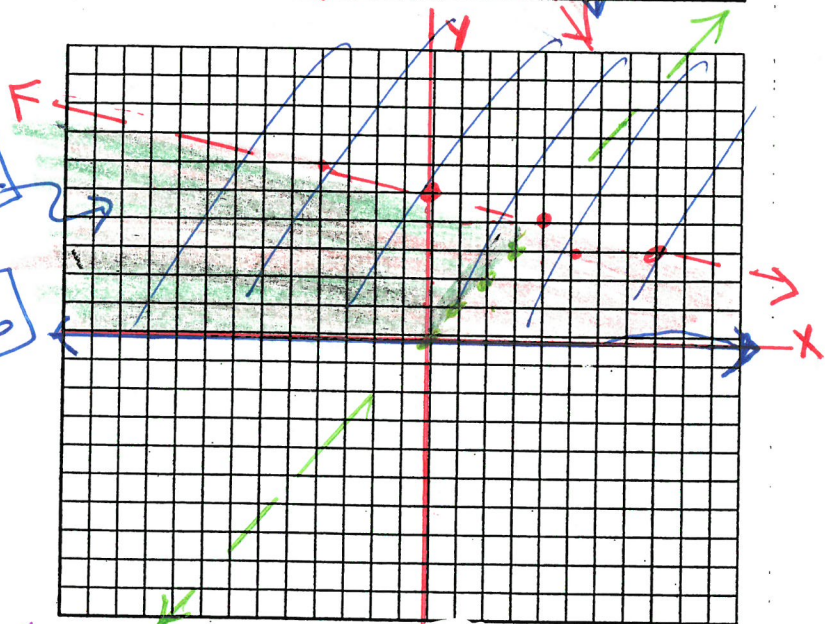


SR

$$\begin{array}{|l}
 x < 10 \\
 x+y > 1 \\
 x: 1 \\
 y: 1 \\
 T(0,0) \\
 0 > 1 \text{ F}
 \end{array}
 \left| \begin{array}{l}
 x \geq y - 2 \\
 \frac{y-2 \leq x}{+2 \quad +2} \\
 \underline{y \leq x+2} \\
 T(0,0) \\
 0 > -2 \text{ (T)}
 \end{array}
 \right.$$

SR

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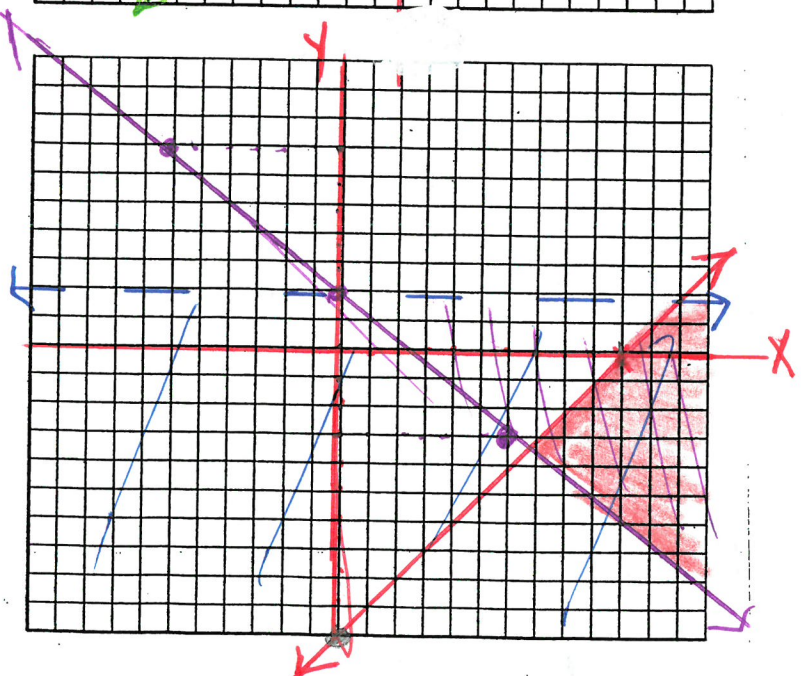


$$y \geq 0$$

$y > x$ <hr/> $T(5,2)$ $2 > 5 \text{ (f)}$
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$$\begin{array}{|l}
 y > -\frac{1}{4}x + 5 \\
 T(0,0) \\
 0 < 20 \text{ T}
 \end{array}$$

47

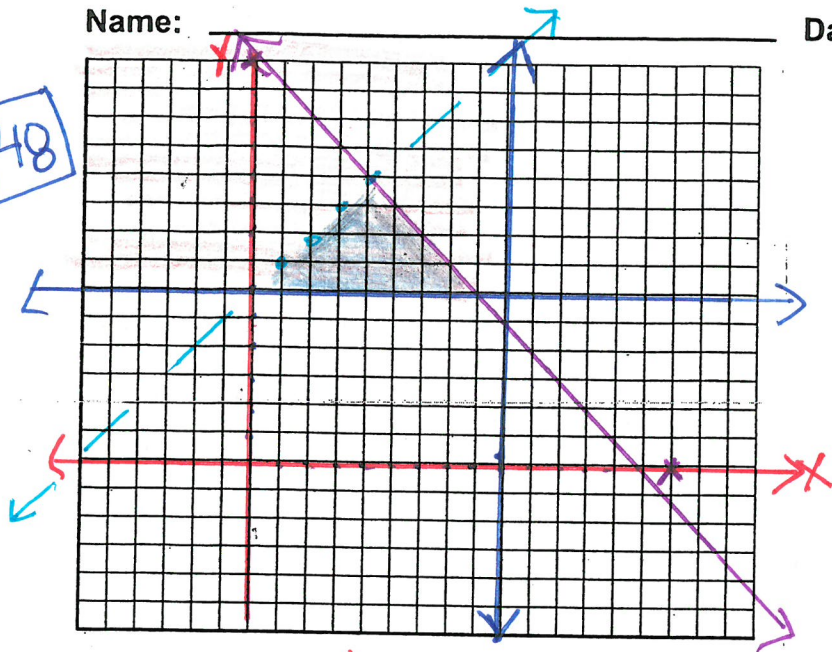


$$\begin{array}{|l}
 5x+6y \geq 12 \\
 -5x \quad -5x \\
 \hline
 6y \geq \frac{-5x+12}{6} \\
 y \geq -\frac{5}{6}x + 2 \\
 T(0,0) \\
 0 \geq 12 \text{ F}
 \end{array}
 \left| \begin{array}{l}
 y < 2 \\
 \hline
 x-y \geq 10 \\
 x: 10 \\
 y: -10 \\
 T(0,0) \\
 0 \geq 10 \text{ F}
 \end{array}
 \right.$$

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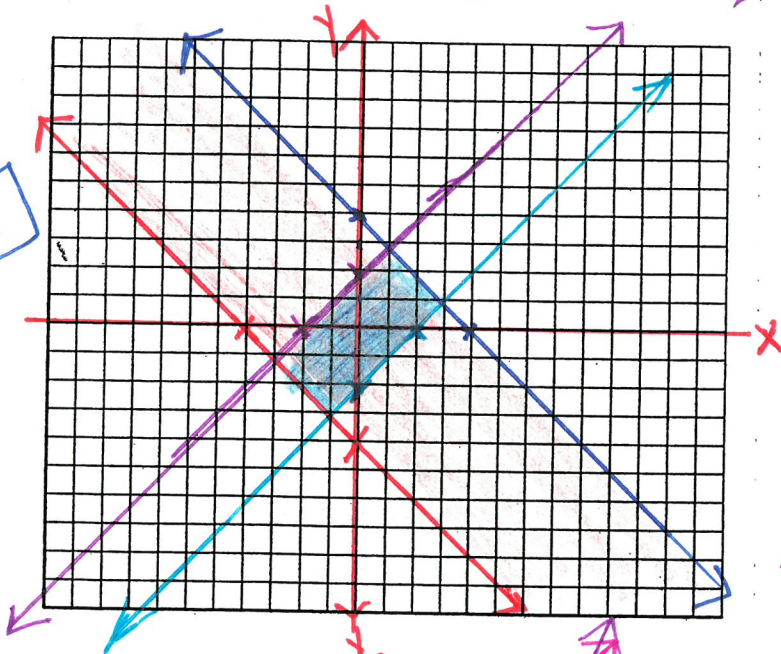


$$\begin{aligned} y &\geq 6 \\ x &\leq 9 \end{aligned}$$

$$\begin{aligned} x+y &< 15 \\ T(0,0) & 0 < 15T \end{aligned}$$

$$\begin{aligned} x &< x+6 \\ T(0,0) & 0 < 6(T) \end{aligned}$$

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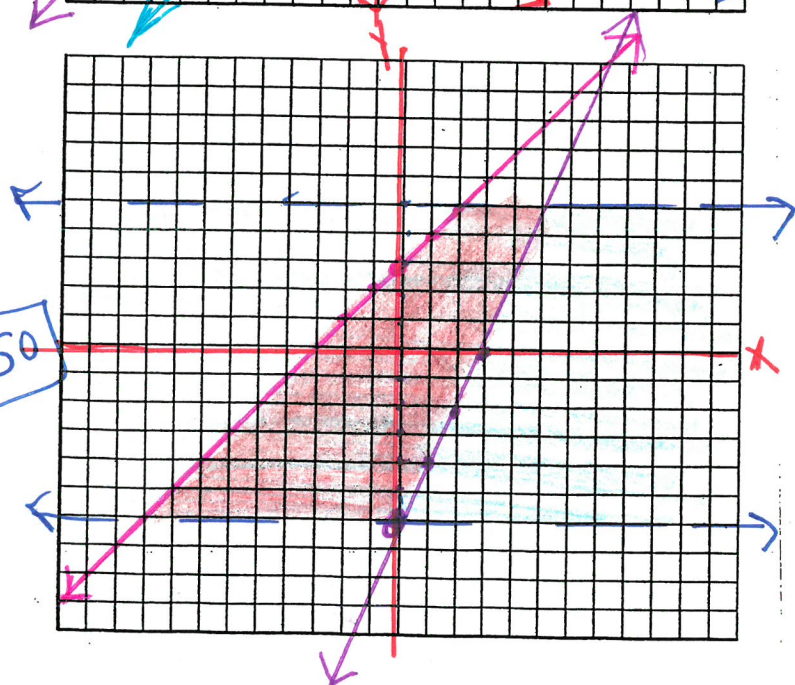
$$\begin{aligned} x+y &\leq 4 \\ x &: 4 \\ y &: 4 \\ T(0,0) & 0 \leq 4T \end{aligned}$$

$$\begin{aligned} x+y &\geq -4 \\ x &: -4 \\ y &: -4 \\ T(0,0) & 0 \geq -4T \end{aligned}$$

$$\begin{aligned} x-y &\geq -2 \\ x &: -2 \\ y &: 2 \\ T(0,0) & 0 \geq -2 \cdot F \end{aligned}$$

$$\begin{aligned} x-y &\leq 2 \\ x &: 2 \\ y &: -2 \\ T(0,0) & 0 \leq 2 \cdot T \end{aligned}$$

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$$\begin{aligned} y &\leq 5 \\ y &\geq -6 \end{aligned}$$

$$\begin{aligned} y &\leq x+3 \\ T(0,0) & 0 \leq 3 \end{aligned}$$

$$\begin{aligned} -2x+y &\geq -6 \\ +2x & \quad +2x \\ y &\geq 2x-6 \end{aligned}$$

$$T(0,0) \quad 0 \geq -6T$$