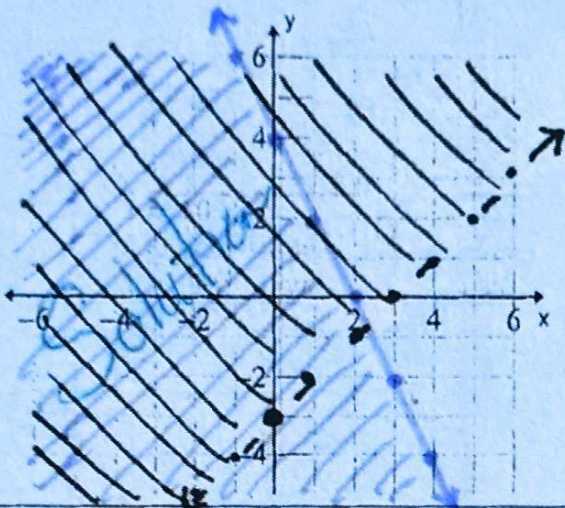


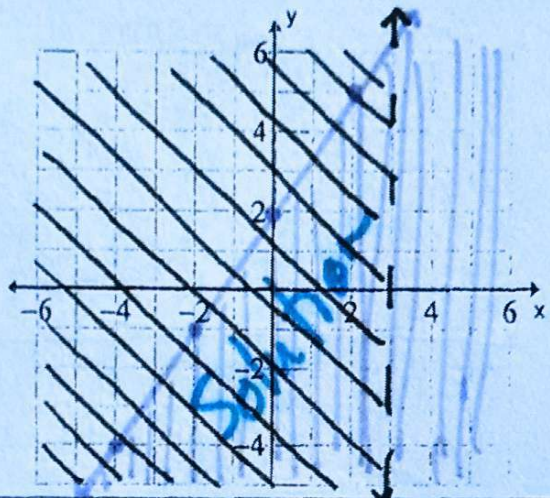
## Solving Systems of Linear Inequalities

Remember: The solution to a system of Linear Inequalities is where the shaded regions overlap.

a. 
$$\begin{cases} y \leq -2x + 4 \\ y > x - 3 \end{cases}$$



b. 
$$\begin{cases} y \leq \frac{3}{2}x + 2 \\ x < 3 \end{cases}$$



c. 
$$\begin{cases} x - 3y < 6 \\ 2x + y > 4 \end{cases}$$
  

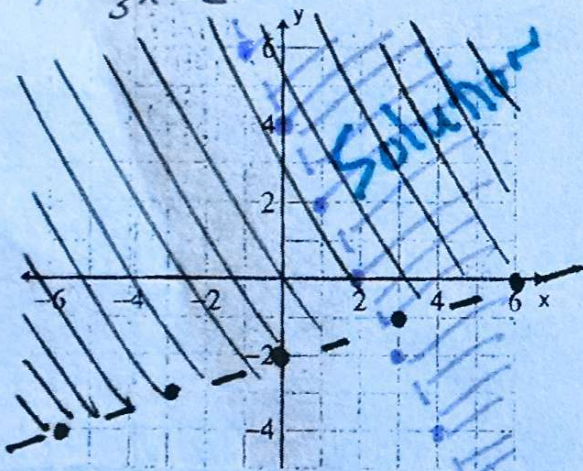
$$x - 3y < 6$$
  

$$-3y < -x + 6$$
  

$$y > \frac{1}{3}x - 2$$
  

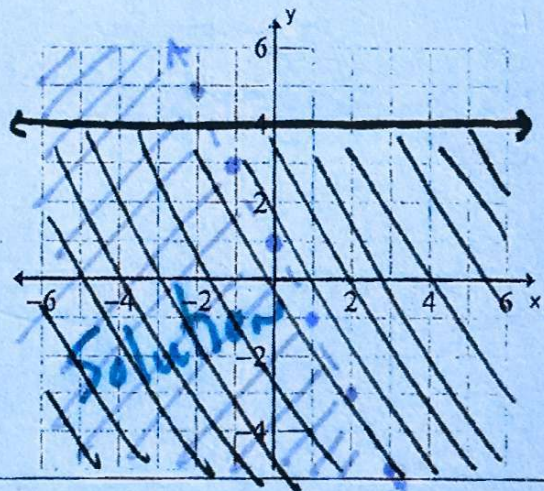
$$2x + y > 4$$
  

$$y > -2x + 4$$



d. 
$$\begin{cases} y \leq 4 \\ 2x + y < 1 \end{cases}$$
  

$$y < -2x + 1$$





HW# 1

Solving Systems of 3 Equations

Solve each system and write your solution as an ordered triple.

$$1) \begin{cases} 4r + 6s - t = -18 \\ 3r + 2s - 4t = -24 \\ -5r + 3s + 2t = 15 \end{cases}$$

$$\begin{array}{r} 4r + 6s - t = -18 \\ (3r + 2s - 4t = -24) \cdot 3 \\ -9r - 6s + 12t = 72 \\ \hline 4r + 6s - t = -18 \\ \hline -5r + 11t = 54 \end{array}$$

$$\begin{array}{r} (-5r + 3s + 2t = 15) \cdot 2 \\ 4r + 6s - t = -18 \\ \hline 10r + 6s - 4t = -30 \\ \hline 14r - 5t = -48 \end{array}$$

$(-2, -1, 4)$

$$\begin{array}{r} (-5r + 11t = 54) \cdot 5 \\ (14r - 5t = -48) \cdot 11 \\ \hline -25r + 55t = 270 \\ +154r + 55t = -528 \\ \hline 129r = -258 \end{array}$$

$r = -2$

$$\begin{array}{r} -5(-2) + 11t = 54 \\ 10 + 11t = 54 \\ 11t = 44 \\ t = 4 \end{array}$$

$$\begin{array}{r} 4r + 6s - t = -18 \\ 4(-2) + 6s - 4 = -18 \\ 6s - 12 = -18 \\ s = -1 \end{array}$$

$$2) \begin{cases} -5x + y - 4z = 60 \\ 2x + 4y + 3z = -12 \\ 6x - 3y - 2z = -52 \end{cases}$$

$$\begin{array}{r} (-5x + y - 4z = 60) \cdot 4 \\ 2x + 4y + 3z = -12 \\ +20x - 4y + 16z = -240 \\ \hline 22x + 19z = -252 \end{array}$$

$$\begin{array}{r} (-5x + y - 4z = 60) \cdot 3 \\ 6x + 3y - 2z = -52 \\ +(-15x + 3y - 12z = 180) \\ \hline -9x - 14z = 128 \end{array}$$

$(-8, 4, -4)$

$$\begin{array}{r} (22x + 19z = -252) \cdot 14 \\ (-9x - 14z = 128) \cdot 19 \\ \hline 308x + 266z = -3528 \\ -171x - 266z = 2432 \\ \hline 137x = -1096 \end{array}$$

$x = -8$

$$\begin{array}{r} 22(-8) + 19z = -252 \\ -176 + 19z = -252 \\ 19z = -76 \\ z = -4 \end{array}$$

$-5r + y - 4z = 60$

$-5(-8) + y - 4(-4) = 60$

$y + 56 = 60$

$y = 4$