

Algebra 2  
Chapter 3 Test Review #1

Solve each system by graphing. Identify each as either Consistent and Independent, Consistent and Dependent, or Inconsistent.

$x=4$   $y=6$

1)  $3x + 2y = 12$   
 $x - 2y = 8$

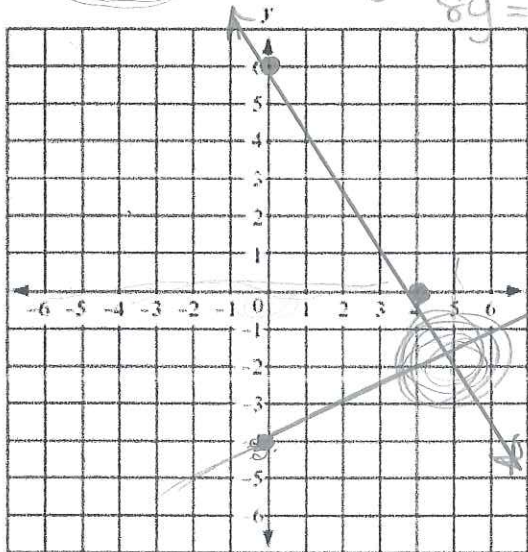
$3(2y+8) + 2y = 12$   
 $6y + 24 + 2y = 12$   
 $8y = -12$

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

$(5, -\frac{1}{2})$

$x - 2y = 8$   
 $x - 2(0) = 8$   
 $x = 8$

$0 - 2y = 8$   
 $y = -4$



$8x - 10y = 7$

$8x = 7$   $-10y = 7 = -\frac{7}{10}$   
 $x = \frac{7}{8} = 0.875$

$4x - 5y = 7$

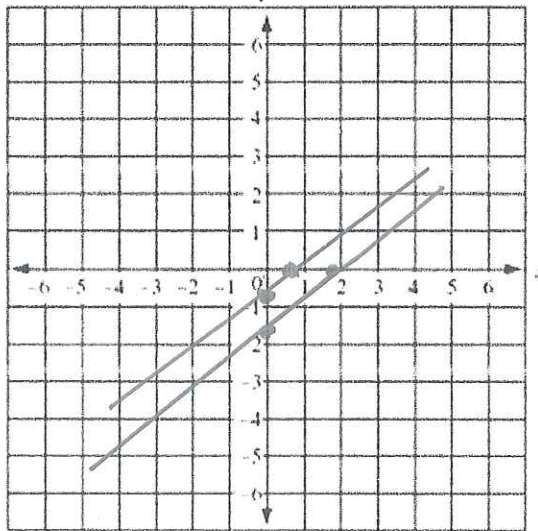
$-5y = 7$

$y = -\frac{7}{5} = -1.4$

$4x = 7$   
 $x = \frac{7}{4} = 1.75$

2)  $8x - 10y = 7$   
 $4x - 5y = 7$

no sol.



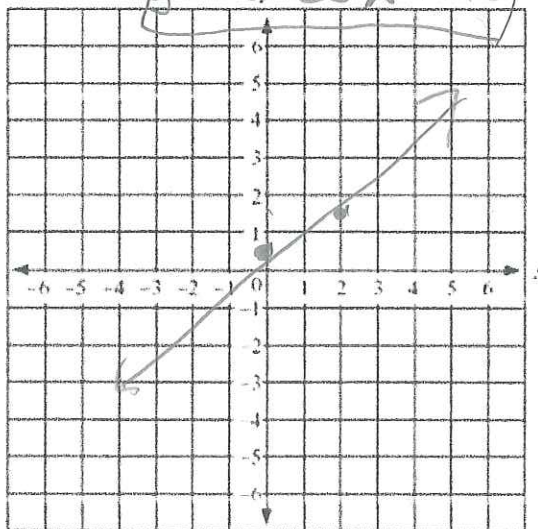
$\frac{20y}{20} = \frac{-13x + 10}{20}$

$y = -0.65x + 0.5$

4)  $20y + 13x = 10$   
 $0.65x + y = 0.5$

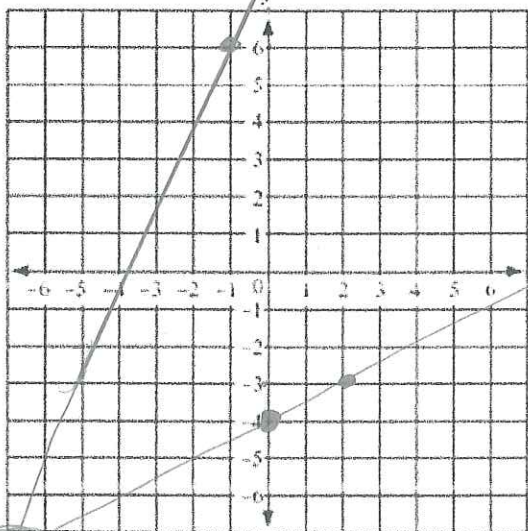
Inf. many

$y = -0.65x + 0.5$



3)  $y - 2x = 8$   
 $y = \frac{1}{2}x - 4$

$y = 2x + 8$



Solve the following systems by substitution. Identify each as either Consistent and Independent, Consistent and Dependent, or Inconsistent.

$$\begin{array}{l}
 5) \begin{cases} x + y = 5 \\ 2x - y = 4 \end{cases} \quad (3, 2) \\
 \hline
 -y - x = 5 \\
 2x - (5 - x) = 4 \\
 2x - 5 + x = 4 \\
 3x - 5 = 4 \\
 3x = 9 \\
 \boxed{x = 3}
 \end{array}$$

$$\begin{array}{l}
 3 + y = 5 \\
 \boxed{y = 2} \quad (3, 2)
 \end{array}$$

Consistent, indep.

$$6) \begin{cases} 2x - 3y = 9 \\ 4x + 2y = -22 \end{cases} \quad \begin{matrix} \text{Cons.} \\ \text{independ.} \\ (-3, -5) \end{matrix}$$

$$\begin{array}{l}
 2x - 3y = 9 \\
 +3y \quad +3y \\
 \hline
 2x = 3y + 9 \\
 x = \frac{3}{2}y + \frac{9}{2}
 \end{array}$$

$$4\left(\frac{3}{2}y + \frac{9}{2}\right) + 2y = -22$$

$$6y + 18 + 2y = -22$$

$$\begin{array}{r}
 8y + 18 = -22 \\
 -18 \quad -18 \\
 \hline
 8y = -40
 \end{array}$$

$$4x + 2(-5) = -22$$

$$\begin{array}{r}
 4x - 10 = -22 \\
 +10 \quad +10 \\
 \hline
 4x = -12
 \end{array}$$

$$\frac{4x}{4} = \frac{-12}{4}$$

$$\begin{array}{l}
 \boxed{y = -5} \\
 \boxed{x = -3}
 \end{array}$$

Solve the following systems by elimination. Identify each as either Consistent and Independent, Consistent and Dependent, or Inconsistent.

$$8) \begin{cases} x + y = 4 \\ x - y = 8.5 \end{cases}$$

$$\begin{array}{r}
 2x = 12.5 \\
 \frac{2x}{2} = \frac{12.5}{2} \\
 \boxed{x = 6.25}
 \end{array}$$

Both are  
consistent  
indep.

$$\begin{array}{r}
 6.25 + y = 4 \\
 -6.25 \quad -6.25 \\
 \hline
 y = -2.25
 \end{array}$$

$$\boxed{y = -2.25}$$

$$\boxed{(6.25, -2.25)}$$

$$9) \begin{cases} -6y - 2x = 0 \\ 11y + 3x = 4 \end{cases} \quad (6, 2)$$

$$-18y - 6x = 0$$

$$22y + 6x = 8$$

$$\begin{array}{r}
 4y = 8 \\
 \frac{4y}{4} = \frac{8}{4} \\
 \boxed{y = 2}
 \end{array}$$

$$-6(2) - 2x = 0$$

$$-12 - 2x = 0$$

$$-2x = 12$$

$$\boxed{x = -6}$$

Solve the following systems using either substitution or elimination.

$$\begin{cases} 7y - 2x = 10 \\ -3y + x = -3 \end{cases}$$

(9, 4)

$$\begin{array}{r} 7y - 2x = 10 \\ -6y + 2x = -6 \\ \hline \end{array}$$

$$\boxed{y = 4}$$

$$7(4) - 2x = 10$$

$$28 - 2x = 10$$

$$-2x = -18$$

$$\boxed{x = 9}$$

$$\begin{cases} 3x - 5y = -13 \\ 4x + 2y = 0 \end{cases}$$

(-1, 2)

$$\begin{array}{r} 6x - 10y = -26 \\ 20x + 10y = 0 \\ \hline \end{array}$$

$$26x = -26$$

$$\boxed{x = -1}$$

$$3(-1) - 5y = -13$$

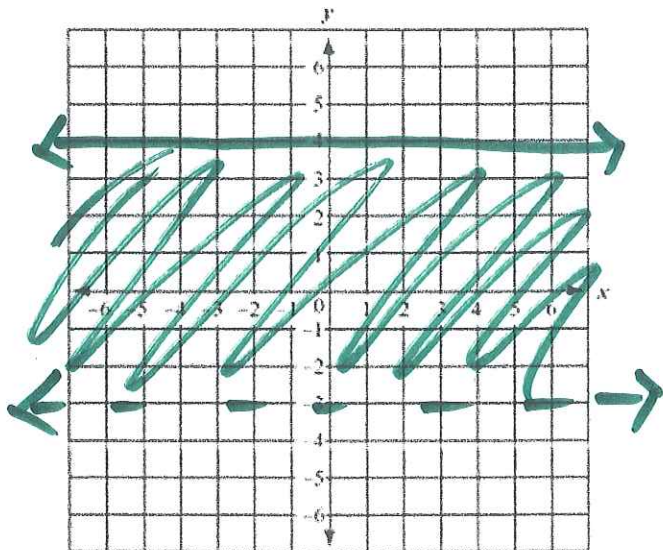
$$-3 - 5y = -13$$

$$-5y = -10$$

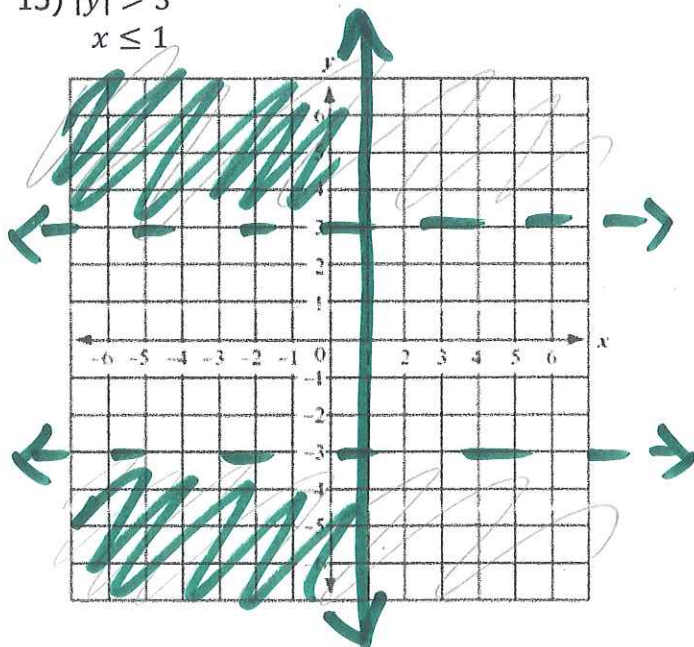
$$\boxed{y = 2}$$

Solve each system of inequalities by graphing.

$$\begin{cases} y \leq 4 \\ y > -3 \end{cases}$$



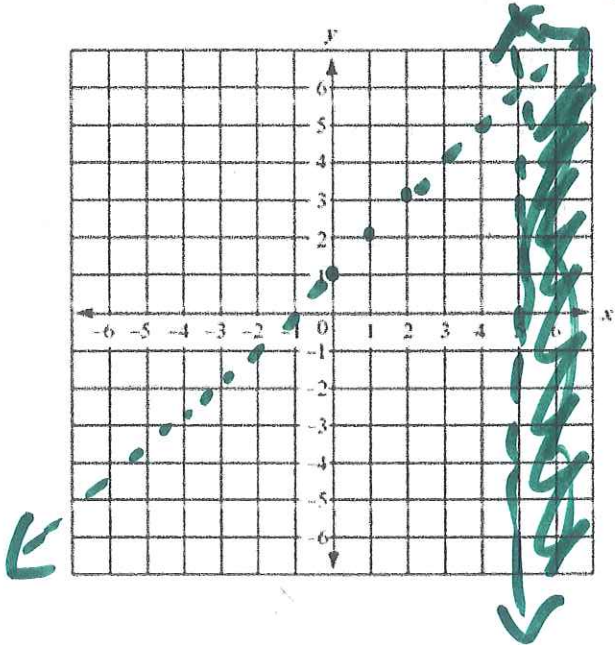
$$\begin{cases} |y| > 3 \\ x \leq 1 \end{cases}$$



$$y > 3 \quad y < -3$$

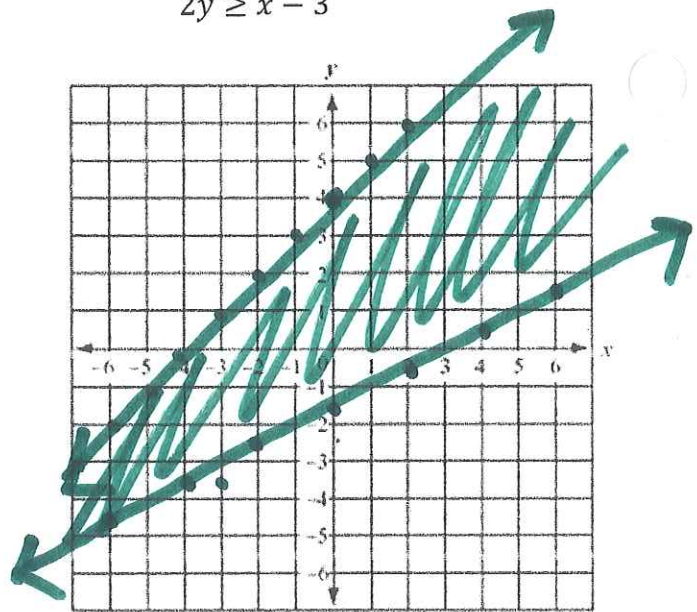
$$14) \begin{cases} y < x + 1 \\ x > 5 \end{cases}$$

$$\begin{array}{r|l} x & x+1 \\ \hline 0 & 1 \\ 2 & 3 \end{array}$$



$$15) \begin{cases} y \leq x + 4 \\ 2y \geq x - 3 \end{cases}$$

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



Solve each system of equations in 3 variables.

$$16) \begin{cases} x + 4y - z = 6 \\ 3x + 2y + 3z = 16 \\ 2x - y + z = 3 \end{cases} \quad (1, 2, 3)$$

$$\begin{aligned} \Rightarrow 3x + 12y - 3z &= 18 \\ 3x + 2y + 3z &= 16 \\ \hline 6x + 14y &= 34 \end{aligned}$$

$$\begin{aligned} 3x + 2y + 3z &= 16 \\ -6x + 3y - 3z &= -9 \\ \hline 2(-3x + 5y) &= 7 \end{aligned}$$

$$2(-3x + 5y) = 7$$

$$\begin{aligned} -6x + 10y &= 14 \\ 6x + 14y &= 34 \\ \hline 24y &= 48 \\ \boxed{y} &= \boxed{2} \end{aligned}$$

$$\begin{aligned} 1 + 4(2) - z &= 6 \\ 1 + 8 - z &= 6 \\ 9 - z &= 6 \\ -z &= -3 \\ \boxed{z} &= \boxed{3} \end{aligned}$$

$$\begin{aligned} 6x + 14(2) &= 34 \\ 6x + 28 &= 34 \\ 6x &= 6 \\ \boxed{x} &= \boxed{1} \end{aligned}$$

$$17) \begin{cases} 2a + b - c = 5 \\ a - b + 3c = 9 \\ 3a - 6c = 6 \end{cases} \quad (4, -2, 1)$$

$$\begin{aligned} 2a + b - c &= 5 \\ a - b + 3c &= 9 \\ \hline 3a + 2c &= 14 \\ -3a + 6c &= -6 \\ \hline 8c &= 8 \end{aligned}$$

$$\begin{aligned} \frac{8c}{8} &= \frac{8}{8} \\ \boxed{c} &= \boxed{1} \end{aligned}$$

$$\begin{aligned} 3a + 2(1) &= 14 \\ 3a + 2 &= 14 \\ -2 & \quad -2 \\ \hline 3a &= 12 \end{aligned}$$

$$\begin{aligned} \frac{3a}{3} &= \frac{12}{3} \\ \boxed{a} &= \boxed{4} \end{aligned}$$

$$\begin{aligned} 2(4) + b - 1 &= 5 \\ 8 + b - 1 &= 5 \\ \boxed{b} &= \boxed{-2} \end{aligned}$$