

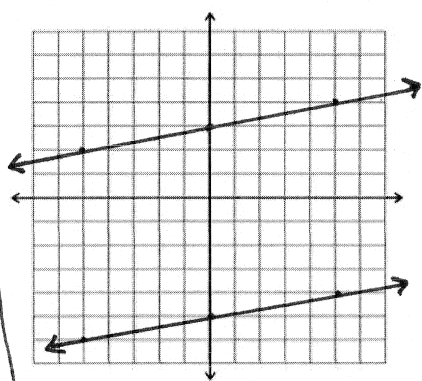
# Chapter 3 Review Worksheet #1 (Skills)

Name: Key

Solve the linear system by graphing (show me how you graphed). Remember, you must check your solution algebraically. Then classify the system as *consistent and independent*, *consistent and dependent*, or *inconsistent*.

1.)  $-x + 5y = 15$

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



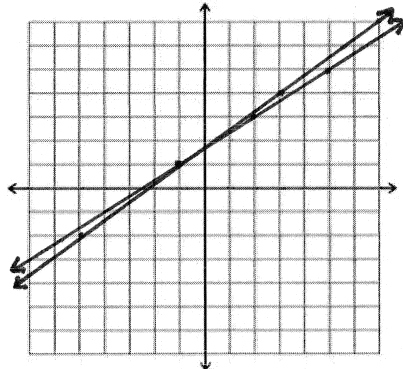
$y = \frac{1}{5}x + 3$

solution: NO SOLUTION

classify: inconsistent

2.)  $-2x + 3y = 5$

$y = \frac{3}{4}x + \frac{7}{4}$



$y = \frac{2}{3}x + \frac{5}{3}$

x	-1	2	5
y	1	3	5

Check (-1, 1)

$-2(-1) + 3(1) = 5$   
 $2 + 3 = 5$   
 $5 = 5 \checkmark$

$1 = \frac{3}{4}(-1) + \frac{7}{4}$

$1 = \frac{-3}{4} + \frac{7}{4}$   
 $1 = 1 \checkmark$

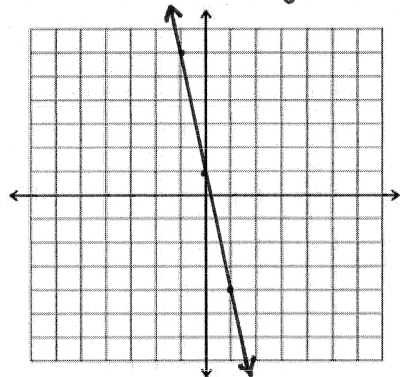
solution: (-1, 1)

classify: consistent independent

3.)  $2y - 2 = -10x \rightarrow y = -5x + 1$

$-20x - 4y = -4$

$y = -5x + 1$



solution: Infinitely Many Solutions

classify: consistent dependent

Solve the linear system using substitution.

4.)  $8x + 2y = 2$

$x + 3y = 14 \rightarrow x = -3y + 14$

$8(-3y + 14) + 2y = 2$

$-24y + 112 + 2y = 2$

$-22y = -110$

$y = 5$

$x = -3(5) + 14$

$x = -15 + 14$

$x = -1$

(-1, 5)

5.)  $7x - 3y = 6$

$-2x + 5y = -10 \rightarrow x = 2.5y + 5$

$7(2.5y + 5) - 3y = 6$

$17.5y + 35 - 3y = 6$

$14.5y = -29$

$y = -2$

$x = 2.5(-2) + 5$

$x = -5 + 5$

$x = 0$

(0, -2)

Solve the linear system using elimination.

$$6.) \quad \begin{aligned} 3x &= 8y & 2(3x - 8y &= 0) \\ -2x + 5y &= -2 & 3(-2x + 5y &= -2) \end{aligned}$$

$$\begin{aligned} 6x - 16y &= 0 \\ -6x + 15y &= -6 \\ \hline -y &= -6 \\ y &= 6 \end{aligned}$$

$$\begin{aligned} 3x &= 8(6) \\ 3x &= 48 \\ x &= 16 \end{aligned}$$

**(16, 6)**

$$7.) \quad \begin{aligned} (4x - 10y = 18) \cdot 4 & \quad 16x - 40y = 72 \\ -16x + 40y = -45 & \quad -16x + 40y = -45 \\ \hline 0 &= 27 \end{aligned}$$

**NO SOLUTION**

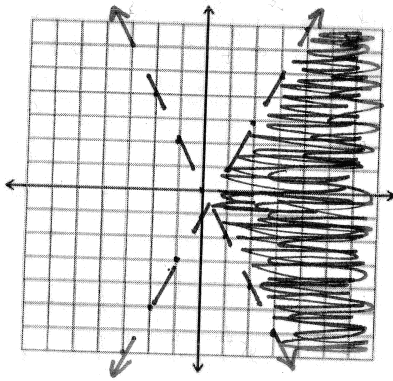
Graph the system of inequalities.

$$8.) \quad \begin{aligned} y &> -2x \\ 2x - y &> 1 \end{aligned}$$

" $y = 2x - 1$ "

Test (0, 2)  
 $2 > 0$  ✓

Test (0, 0)  
 $0 > 1$  NO



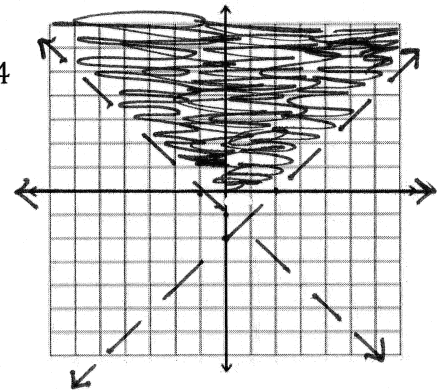
$$9.) \quad \begin{aligned} 4x + 4y &> -4 \\ -2x + 2y &> -4 \\ y &\geq 0 \end{aligned}$$

x int: (-1, 0)  
y int: (0, -1)

Test (0, 0)  
 $0 > -4$  ✓

x int (2, 0)  
y int (0, -2)

Test (0, 0)  
 $0 > -4$  ✓

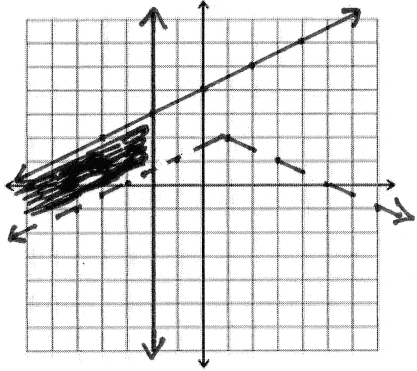


$$10.) \quad \begin{aligned} y &> -\frac{1}{2}|x - 1| + 2 \\ x &\leq -2 \\ y &\leq \frac{1}{2}x + 4 \end{aligned}$$

vertex: (1, 2)  
opens: down

x	-3	-1	1	3	5
y	0	1	2	1	0

Test: (0, 0)  
 $0 > 1.5$  NO



Test (0, 0)  
 $0 \leq 4$  yes

Solve the linear system using any algebraic method.

$$11.) \quad 8x - 2y + z = -6 \quad \xrightarrow{x2} \quad 16x - 4y + 2z = -12$$

$$-x + 3y - 2z = -15 \quad \longrightarrow \quad -x + 3y - 2z = -15$$

$$3x - y + 4z = 13$$

$$\boxed{15x - y = -27}$$

$$x2 \rightarrow -2x + 6y - 4z = -30$$

$$3x - y + 4z = 13$$

$$15x - y = -27$$

$$-15x - 75y = 225$$

$$\hline -76y = 228$$

$$\boxed{y = -3}$$

$$\boxed{x + 5y = -17} \quad \times 15$$

$$x + 5(-3) = -17$$

$$x - 15 = -17$$

$$\boxed{x = -2}$$

$$3(-2) - (-3) + 4z = 13$$

$$-6 + 3 + 4z = 13$$

$$-3 + 4z = 13$$

$$4z = 16$$

$$\boxed{z = 4}$$

solution:  $\underline{(-2, -3, 4)}$

$$12.) \quad 10x + 2y - 2z = 12 \quad \longrightarrow \quad 10x + 2y - 2z = 12$$

$$2x + 2y + 2z = 4$$

$$2x + 2y + 2z = 4$$

$$3x + y = 4$$

$$\boxed{12x + 4y = 16}$$

$x - y$

$$12x + 4y = 16$$

$$-12x - 4y = -16$$

$$\hline 0 = 0$$

solution: Infinite  
many  
Solutions

$$13.) \quad x + y - z = 7 \quad \longrightarrow \quad x + y - z = 7$$

$$2x - 3y + z = 2 \quad \longrightarrow \quad 2x - 3y + z = 2$$

$$4x + 2y - 2z = 20$$

$$\boxed{3x - 2y = 9} \quad \times 2$$

$$x2 \rightarrow 4x + 2y - 2z = 20$$

$$4x - 6y + 2z = 4$$

$$-6x + 4y = -18$$

$$8x - 4y = 24$$

$$\boxed{8x - 4y = 24}$$

$$\hline 2x = 6$$

$$\boxed{x = 3}$$

$$3(3) - 2(y) = 9$$

$$9 - 2y = 9$$

$$-2y = 0$$

$$\boxed{y = 0}$$

$$3 + 0 - z = 7$$

$$3 - z = 7$$

$$-z = 4$$

$$\boxed{z = -4}$$

solution:  $\underline{(3, 0, -4)}$