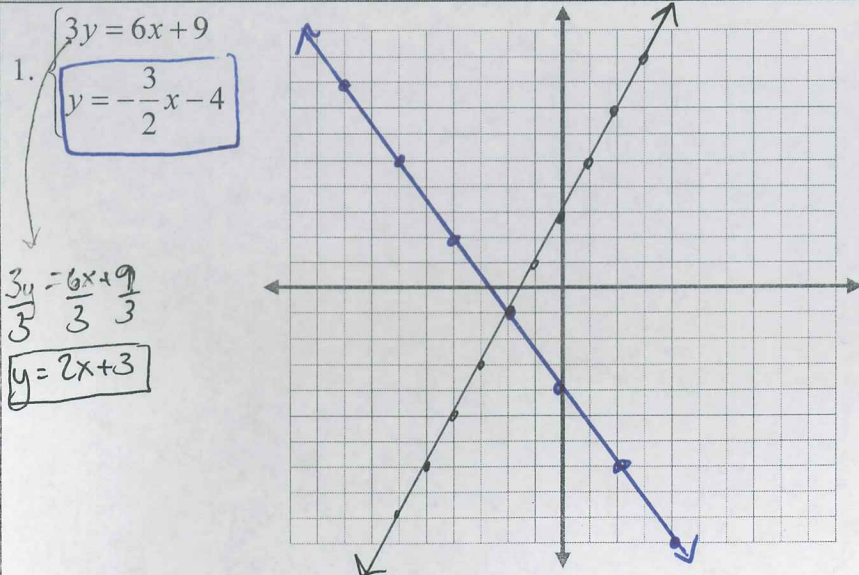


Solve the system of linear equations by graphing. Check your answer and state the type of system.



**Type:**

CONSISTENT, INDEPENDENT

**Check:**

$(-2, -1)$

$$3y = 6x + 9$$

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

$$3(-1) = 6(-2) + 9$$

$$-1 = -\frac{3(-2) - 4}{2}$$

$$-3 = -12 + 9$$

$$= \frac{6}{2} - 4$$

$$-3 = -3$$

$$= 3 - 4$$

$$-1 = -1$$

Solve the system of linear equations by substitution. Check your answer and state the type of system.

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

$$-5(4y - 3) + 3y = -2$$

$$x = 4(1) - 3$$

$$-20y + 15 + 3y = -2$$

$$= 4 - 3$$

$$\begin{array}{r} -17y + 15 = -2 \\ -15 \quad -15 \end{array}$$

$$x = 1$$

$$\begin{array}{r} -17y = -17 \\ -17 \quad -17 \end{array}$$

$$y = 1$$

**Type:**

CONSISTENT, INDEPENDENT

**Check:**

$(1, 1)$

$$x = 4y - 3$$

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

$$1 = 4(1) - 3$$

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

$$1 = 4 - 3$$

$$-5 + 3 = -2$$

$$1 = 1$$

$$-2 = -2$$

Solve the system of linear equations by elimination. Check your answer and state the type of system.

$$3. \begin{cases} -3x + 3y = -3 \\ -4x + 9y = 11 \end{cases} \Rightarrow \begin{array}{r} 9x - 9y = 9 \\ -4x + 9y = 11 \\ \hline 5x = 20 \\ \frac{5x}{5} = \frac{20}{5} \\ x = 4 \end{array}$$

$$\begin{array}{r} -4x + 9y = 11 \\ -4(4) + 9y = 11 \\ -16 + 9y = 11 \\ +16 \quad +16 \\ \hline 9y = 27 \\ \frac{9y}{9} = \frac{27}{9} \\ y = 3 \end{array}$$

Type:

CONSISTENT, INDEPENDENT

Check:

(4, 3)

$$-3x + 3y = -3$$

$$-3(4) + 3(3) = -3$$

$$-12 + 9 = -3$$

$$-3 = -3$$

✓

$$-4x + 9y = 11$$

$$-4(4) + 9(3) = 11$$

$$-16 + 27 = 11$$

$$11 = 11$$

✓

↓

Solve the system of linear equations by the method of your choice. Check your answer and state the type of system.

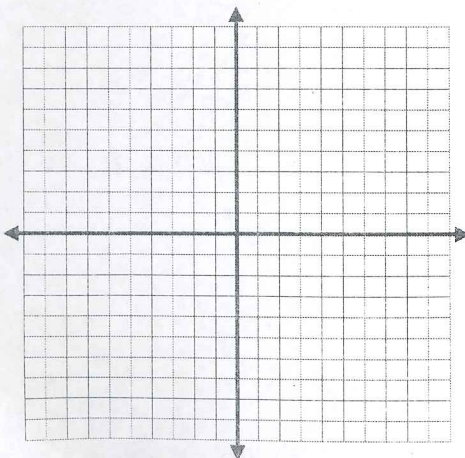
$$4. \begin{cases} -2x + 2y = 12 \\ x - y = 6 \end{cases} \Rightarrow \begin{array}{r} -2x + 2y = 12 \\ + 2x - 2y = 12 \\ \hline 0 = 24 \end{array}$$

Type:

INCONSISTENT

Check:

(Graph provided if needed)

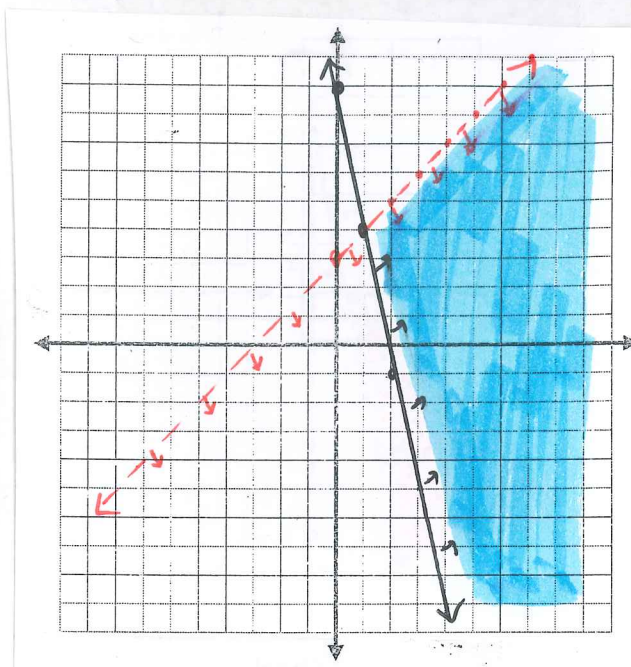


Solve the system of linear inequalities by graphing. Identify three solutions and one non-solution.

$$5. \begin{cases} y < x + 3 \\ y + 5x \geq 9 \end{cases}$$

$$-5x - 5x$$

$$y \geq -5x + 9$$



Identify three solutions:

Identify one non-solution:

Jack and Lucy

6. Jack and Lucy are brother and sister. In 2005 the sum of Jack and Lucy's ages was 15. The difference of four times Jack's age and two times Lucy's age was 6. How old was Jack in 2005? How old was Lucy? How old are they today?

$$2(J + L = 15) \rightarrow \begin{array}{r} 2J + 2L = 30 \\ + 4J - 2L = 6 \\ \hline 6J = 36 \end{array}$$

$$\frac{6J}{6} = \frac{36}{6}$$

$$J = 6$$

$$\begin{array}{r} J + L = 15 \\ 6 + L = 15 \\ -6 \quad -6 \\ \hline L = 9 \end{array}$$

Jack's age in 2005: 6

Lucy's age in 2005: 9

Jack's age today: 16

Lucy's age today: 19

Solve the system of linear and quadratic equations graphically or algebraically. Check your solution. Use chart and grid provided if you choose graphically otherwise you can ignore them.

$$7. \begin{cases} y = (x+5)(x-1) \\ y = 3x-3 \end{cases}$$

$$3x-3 = (x+5)(x-1)$$

$$3x-3 = x \begin{array}{|c|c|} \hline x & +5 \\ \hline x^2 & +5x \\ \hline -1 & -1x & -5 \\ \hline \end{array}$$

$$3x-3 = x^2+4x-5$$

$$+3 \qquad \qquad +3$$

$$3x = x^2+4x-2$$

$$-3x \qquad -3x$$

$$0 = x^2+x-2$$

$$0 = (x+2)(x-1)$$

$$x+2=0$$

$$-2 \quad -2$$

$$x=-2$$

$$x-1=0$$

$$+1 \quad +1$$

$$x=1$$

$$y = 3x-3$$

$$= 3(-2)-3$$

$$= -6-3$$

$$y = -9$$

$$y = 3x-3$$

$$= 3(1)-3$$

$$= 3-3$$

$$y = 0$$

$$(-2, -9)$$

$$(1, 0)$$

x	y = (x+5)(x-1)
0	-5
-5	0
-2	-9
1	0
-4	-5

$$y = (x+5)(x-1)$$

VERTIX:  $x = -2$

$$y = (-2+5)(-2-1)$$

$$= (3)(-3)$$

$$y = -9$$

y-INTERCEPT

$$x = 0$$

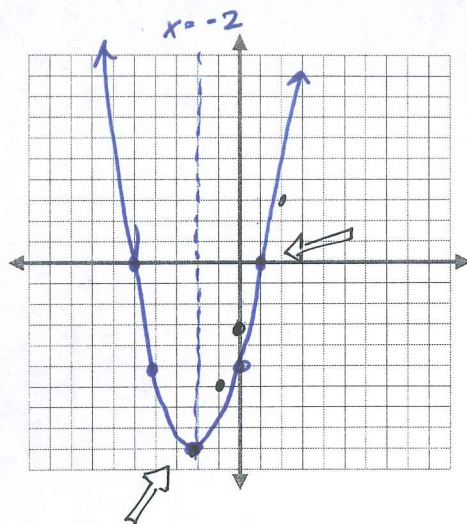
$$y = (0+5)(0-1)$$

$$= (5)(-1)$$

$$y = -5$$

$$y = (x+5)(x-1)$$

$$y = 3x-3$$



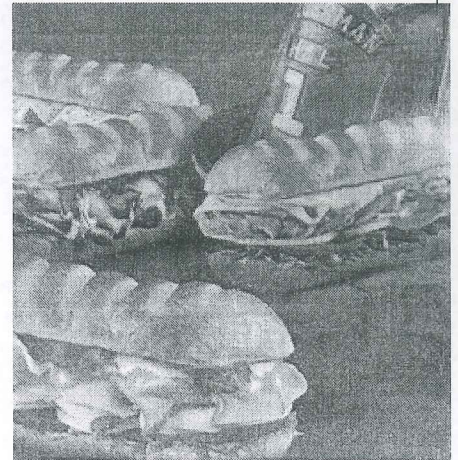
Check:	
$(1, 0)$	$(-2, -9)$
$0 = (1+5)(1-1)$ $= (6)(0)$ $0 = 0 \checkmark$	$-9 = (-2+5)(-2-1)$ $= (3)(-3)$ $-9 = -9 \checkmark$
$0 = 3(1) - 3$ $= 3 - 3$ $0 = 0 \checkmark$	$-9 = 3(-2) - 3$ $= -6 - 3$ $-9 = -9 \checkmark$

This Problem will be extra credit on the test

8. Write a word problem for the following system:

$$\begin{cases} 2x + 3y = 24 \\ x + y = 9 \end{cases}$$

9. Kelly and Stacy are both ordering subs for lunch today. Kelly orders 3 regular 6-inch subs and 1 large footlong sub for \$23. Stacy orders from the same sub shop, but she is ordering for a larger group. She orders 6 regular 6-inch subs and 4 large footlong sub for \$62. How much does a regular 6-inch sub cost? How much does a large footlong sub cost?



a) Identify your variables.

$x$ : COST OF A 6" SUB

$y$ : COST OF A FOOTLONG

b) Write the system of equations that can be used to represent this situation.

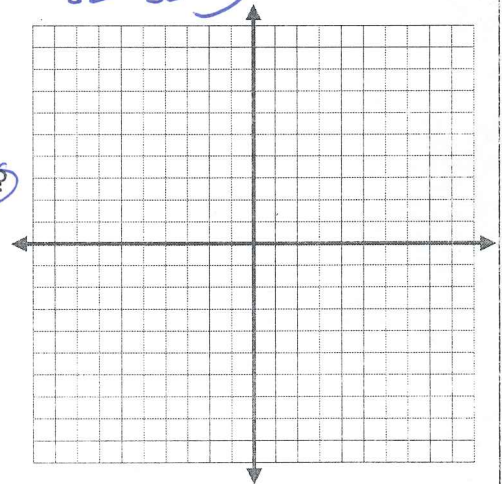
(Kelly)  $3x + 1y = 23$

(Stacy)  $6x + 4y = 62$

c) Choose a method to solve the system above. What method did you choose? Why? (Graph provided if choose graphing)

$$\begin{array}{r} -2(3x + 1y = 23) \Rightarrow -6x - 2y = -46 \\ 6x + 4y = 62 \\ \hline 2y = 16 \\ \frac{2y}{2} = \frac{16}{2} \\ y = 8 \end{array}$$

$$\begin{array}{r} 6x + 4y = 62 \\ 6x + 4(8) = 62 \\ 6x + 32 = 62 \\ -32 \quad -32 \\ \hline 6x = 30 \\ \frac{6x}{6} = \frac{30}{6} \\ x = 5 \end{array}$$



d) Find the price of a regular 6-inch sub and of a large footlong sub?

CHECK:  $3(5) + 8 = 23$   
 $15 + 8 = 23$   
 $23 = 23$   
 ✓

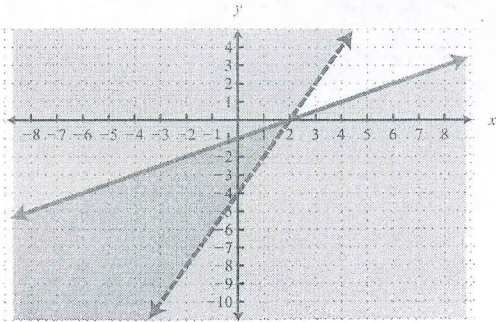
$6(5) + 4(8) = 62$   
 $30 + 32 = 62$   
 $62 = 62$   
 ✓

e) Greg is ordering subs from the same sub shop. He orders 4 regular 6-inch subs and 2 large footlong subs. What is his cost?

$4x + 2y \Rightarrow 4(5) + 2(8)$   
 $20 + 16$   
 $\$36$

These 5 problems will be multiple choice on the test.

1. Identify three solutions and one non-solution of the system of linear inequalities graphed below?



Identify three solutions:

Identify one non-solution:

2. Fill in the steps when solving  $\begin{cases} -3x + 7y = 1 \\ y = -2x + 5 \end{cases}$  for  $x$  by substitution?

Step 1:  $-3x + 7(-2x + 5) = 1$

Step 2:  $-3x - 14x + 35 = 1$

Step 3:  $-17x + 35 = 1$   
 $\quad -35 \quad -35$

Step 4:  $-17x = -34$   
 $\quad -17 \quad -17$

Step 5:  $x = 2$

3. Ryan wants to eliminate the variable  $y$  from the system below by adding.

$$\begin{cases} 7x - 9y = -11 \\ 2x + 3y = 8 \end{cases}$$

First, he will have to multiply one of the equations by a number. How will he eliminate  $y$ ?

Multiply each term in  $2x + 3y = 8$  by  $3$ .

4. What are the solutions of the following system of equations:

$$\begin{cases} y = x^2 + 6x - 25 \\ y = 2x + 7 \end{cases}$$

$$2x + 7 = x^2 + 6x - 25$$

$$-7 = x^2 + 4x - 25$$

$$0 = x^2 + 4x - 32$$

$$0 = (x + 8)(x - 4)$$

$$\begin{array}{l} x + 8 = 0 \\ -8 - 8 \\ x = -8 \end{array} \quad \begin{array}{l} x - 4 = 0 \\ +4 +4 \\ x = 4 \end{array}$$

$y = 2x + 7$	$y = 2x + 7$
$= 2(-8) + 7$	$= 2(4) + 7$
$= -16 + 7$	$= 8 + 7$
$= -9$	$= 15$

$(-8, -9)$	$(4, 15)$
------------	-----------

CHECK

$$y = x^2 + 6x - 25$$

$$(-8, -9)$$

$$-9 = (-8)^2 + 6(-8) - 25$$

$$= 64 - 48 - 25$$

$$= 16 - 25$$

$$-9 = -9 \checkmark$$

$$(4, 15)$$

$$15 = 2(4) + 7$$

$$= 8 + 7$$

$$15 = 15 \checkmark$$

$$y = 2x + 7$$

$$(-8, -9)$$

$$-9 = 2(-8) + 7$$

$$= -16 + 7$$

$$-9 = -9 \checkmark$$

$$(4, 15)$$

$$15 = 2(4) + 7$$

$$= 8 + 7$$

$$15 = 15 \checkmark$$

5. Write the system represented by the graph?

