

Name: _____

Date: _____

SYSTEMS OF LINEAR EQUATIONS AND INEQUALITIES
REVIEW QUESTIONS

Part I Questions

1. Which of the following points is a solution to the system shown below?

(1) $(5, 12)$ (3) $(1, 10)$ $y = x + 7$

(2) $(2, 9)$ (4) $(-4, 7)$ $y = 11 - x$

2. The system shown below has a solution when $x = 1$. What must be the value of b in the second equation?

(1) 10 (3) 5 $y = 3x + 5$

(2) 2 (4) 6 $y = -2x + b$

3. Which of the following is the x -coordinate of the solution to the system shown below?

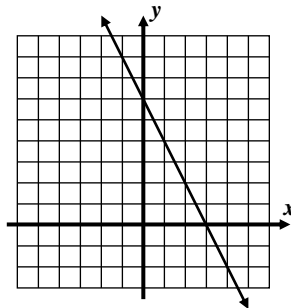
(1) $x = -5$ (3) $x = 3$ $y = 4x + 7$

(2) $x = 7$ (4) $x = -2$ $x + y = -3$

4. The linear equation $y = -2x + 6$ is shown graphed below. If it creates a system with the linear equation $y = x + 3$, which of the following would be the y -coordinate of the solution?

(1) $y = -3$ (3) $y = 8$

(2) $y = -1$ (4) $y = 4$



5. The point $(2, 5)$ is a solution to the system of equations $x + 2y = 12$. Which of the following equations would it *not* be a solution to?

(1) $4x + y = 13$ (3) $6x - 2y = 2$

(2) $-2x + 3y = 11$ (4) $2x + 4y = 12$

6. Which of the following values of x solves the system shown below?

(1) $x = -5$ (3) $x = -3$ $3x - 2y = -19$

(2) $x = 7$ (4) $x = -25$ $2x + 2y = -6$

7. Which value of y below is the solution to the system shown below?

(1) $y = 6$ (3) $y = -4$ $x + 2y = 27$

(2) $y = -1$ (4) $y = 8$ $2x + 3y = 46$

8. The sum of two integers is 23 and the positive difference of the same two integers is 13. What is the product of these two integers?

(1) 90 (3) 46

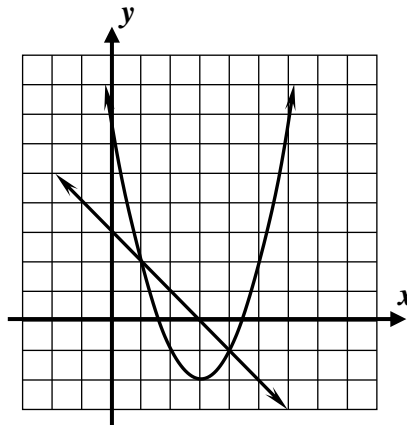
(2) 75 (4) 299

9. The line $y = -x + 3$ and parabola $y = x^2 - 6x + 7$ are graphed below. Which of the following represents the solution set to the equation:

$$x^2 - 6x + 7 = -x + 3$$

(1) $\{-1, 5\}$ (3) $\{1, 4\}$

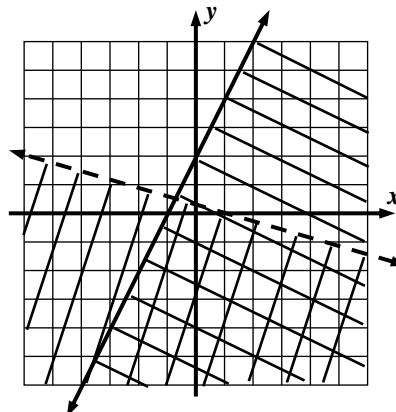
(2) $\{-1, 2\}$ (4) $\{0, 4\}$



10. Which of the following points lies in the solution set of the system of inequalities shown graphed below?

(1) $(1, 0)$ (3) $(2, 2)$

(2) $(-4, 0)$ (4) $(2, -4)$



Free Response Questions

11. Explain how you can tell that the point $(5, 13)$ is a solution to the system shown below, without formally solving the system?

$$y = 4x - 7$$

$$2x + y = 23$$

12. If the point $(2, 5)$ is a solution to the system of equations shown below, then determine the missing values of b and m . Show how you arrive at your answer.

$$y = 3x + b$$

$$y = mx + 9$$

11. Solve the following system of equation using the method of substitution. Show the work that leads to your answer.

$$y = -2x - 10$$

$$2x + 5y = 6$$

12. Would the point $(5, 10)$ lie in the solution set of the system of inequalities shown below? Justify your answer.

$$x > 2$$

$$y \geq 3x - 7$$

13. Danny used the method of elimination to solve the system below:

$$4x + 3y = 12$$

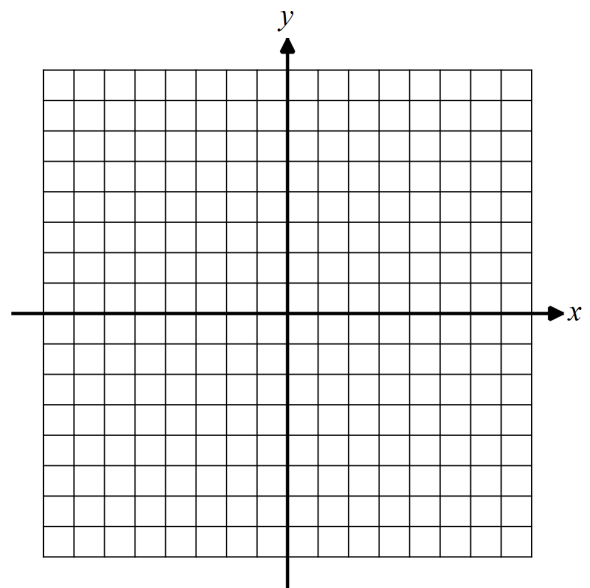
$$2x + y = 5$$

- (a) Danny first rewrote the second equation as $-6x - 3y = -15$. What property justifies writing this equation?
- (b) Is the x -coordinate that solves the system greater or less than one? Justify your answer.

14. Solve the following system of equations graphically. Label your equations.

$$2y - 5x = -8$$

$$y = -\frac{1}{2}x + 2$$



15. Solve the following system by the method of elimination.

$$2x + 5y = 5$$

$$3x + 2y = -9$$

16. At a local movie theatre, sodas cost \$4.50 and bags of popcorn cost \$1.50. If Kirk buys three times as many bags of popcorn as sodas and pays a total of \$36, answer the following questions.

(a) If s is the number of sodas bought and p is the number of bags of popcorn, write a system of equations that models this scenario and explain how your system models the problem.

(b) Determine how many of each item Kirk bought. Do this by using an algebraic solution to the system you wrote in (a).

17. Jody is supplying his food truck for the week. He buys 32 pounds of pork and 50 pounds of chicken for a total of \$185. He realizes he did not purchase enough of either and returns to buy 8 more pounds of pork and 20 more pounds of chicken for a total of \$65.60. Determine the unit price, in dollars per pound, for the pork and the chicken.

18. The graphs of two functions, $f(x)$ and $g(x)$, intersect only once. Selected values of the functions are shown in the table below. Based on the table, state the solution to the equation:

$$f(x) = g(x)$$

x	-3	-1	0	2	5	8
$f(x)$	7	4	-2	-8	0	5
$g(x)$	-8	2	5	-8	4	-3

Explain how you arrived at your choice.

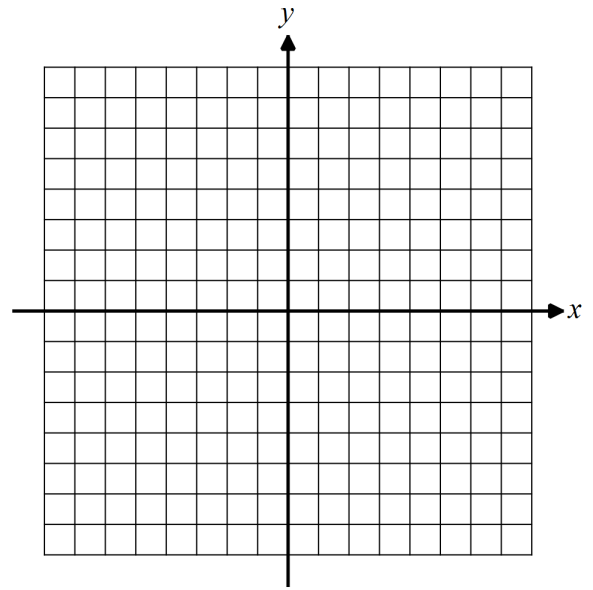
19. Given the system of inequalities shown below, answer the following questions.

$$y \geq 2x + 3$$

$$y + x > 0$$

(a) Is the point $(-1, 5)$ in the solution set? Justify without first graphing.

(b) Graph the solution set on the axes provided.



20. Marcus is working at a local pizzeria where he makes \$12.50 per hour and is also working at the university bookstore where he makes \$9.50 per hour. He must make at least \$300 per week to cover his expenses but cannot work more than 30 hours per week in order to attend classes.

If p represents the hours he works at the pizzeria and b represents the hours he works at the bookstore, do the following.

(a) Write a system of inequalities that models this situation.

(b) The bookstore would like Marcus to pick up a weekly workload of 18 hours. Does this value for b lie in the solution set of the system of inequalities? Explain.