Name: _____
Period: _____

Algebra 2 **Review for Test#1: Systems of Linear Equations and Inequalities** ***A day (Nov 8) B day (Nov 9)***

Review problems from the past. These types of problems will be on this test.

1) Solve. Remember to determine (+) case and (-) case

a) $|q-3|=14$

b) $|2q+5|-15=-4$

c) $|3q+1|+10=7$

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2) Evaluate each given expression. $f(x)=7-3x$ $g(x)=-3x^2+1$

a) Find $f(-2)=$

b) Find $g(2)=$

c) Find $g(-1)=$

d) Find $5g(x)=$

e) Find $f(g(x))=$

f) Find $f(x)+g(x)=$

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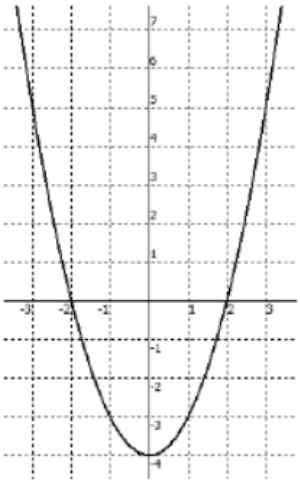
3) Identify the following given the graph of the function $f(x)=$



$f(3)=$

x-intercept(s):

y-intercept:

Write the equation of the function:

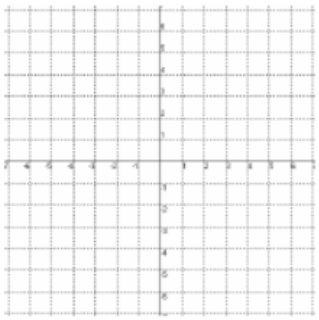
Identify the domain:

Identify the range:

4) Solve by graphing.

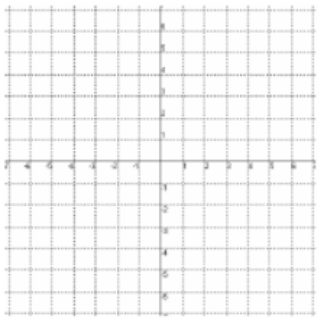
a) $\begin{cases} y = -\frac{1}{3}x + 4 \\ y = 3 \end{cases}$

solution: _____



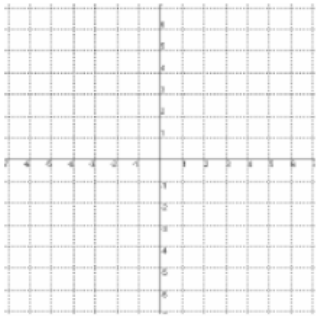
b) $\begin{cases} x + y = 1 \\ 2x - 3y = 12 \end{cases}$

solution: _____



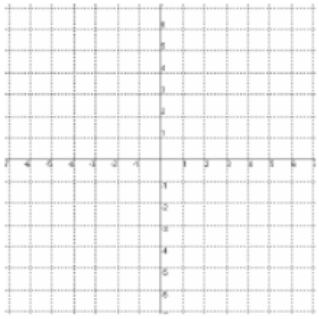
c) $\begin{cases} y = 2x + 2 \\ y = 2x - 3 \end{cases}$

solution: _____



d) $\begin{cases} x + 5y = 10 \\ -2x - 10y = -20 \end{cases}$

solution: _____



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5) Solve using the substitution method.

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

solution: _____

b) $\begin{cases} 2x + 3y = 5 \\ x - 5y = 9 \end{cases}$

solution: _____

6) Solve using the elimination method (in other words . . . linear combination method).

a) $\begin{cases} 5x+7y=11 \\ -5x+3y=19 \end{cases}$

b) $\begin{cases} 2x-5y=10 \\ 4y=-15+3x \end{cases}$

solution: _____ solution: _____

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7) Solve using the method of your choice.

a) $\begin{cases} x-2y=-6 \\ 2y=-10+5x \end{cases}$

b) $\begin{cases} -2x+y=6 \\ 4x-2y=5 \end{cases}$

solution: _____ solution: _____

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8) Solve each word problem. Your answers *must* be in the form of a sentence for full credit.

a. You are in charge of buying balloons for the upcoming prom. You want to use both latex and mylar balloons. The latex balloons cost \$0.10 each and the mylar balloons cost \$0.50 each. You need 125 balloons and you have \$32.50 to spend. How many of each kind of balloon can you purchase?

solution: _____

b. The sum a number and another number is -42. The first number minus the second number is 52. Find the numbers. Remember: Your answer *must* be in the form of a sentence for full credit.

solution: _____

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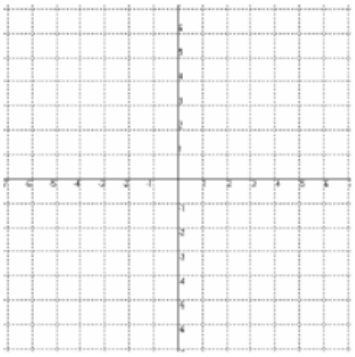
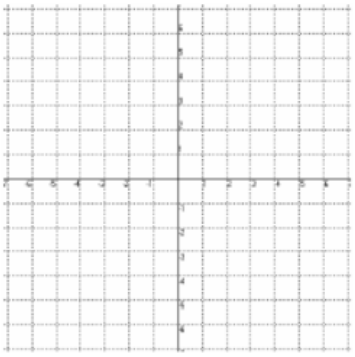
9) <u>Graph the system of inequalities to determine the solution area.</u>

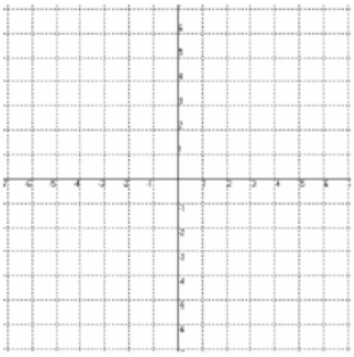
a. $\begin{cases} y \geq -2x+1 \\ x < 3 \end{cases}$

b. $\begin{cases} x+2y \geq -6 \\ -x+2y < 2 \end{cases}$

c. $-2 < y \leq 3$







Name: Key
Period: _____

Algebra 2 **Review for Test#1: Systems of Linear Equations and Inequalities** ***A day (Nov 8) B day (Nov 9***

Review problems from the past. These types of problems will be on this test.

1) Solve. Remember to determine (+) case and (-) case

a) $|q-3|=14$

(+) case: $q-3=14$, $q=14$

(-) case: $q-3=-14$, $q=-11$

$q=14,-11$

b) $|2q+5|-15=-4$

$|2q+5|=11$

(+) case: $2q+5=11$, $2q=6$, $q=3$

(-) case: $2q+5=-11$, $2q=-16$, $q=-8$

$q=3,-8$

c) $|3q+1|+10=7$

$|3q+1|=-3$

no solution

---

2) Evaluate each given expression. $f(x)=7-3x$ $g(x)=-3x^2+1$

a) Find $f(-2)=$

$=7-3(-2)$

$=7+6$

$=13$

b) Find $g(2)=$

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

$=-3\cdot4+1$

$=-12+1$

$=-11$

c) Find $g(-1)=$

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

$=-3(1)+1$

$=-3+1$

$=-2$

d) Find $5g(x)=$

$=5(-3x^2+x)$

$=-15x^2+5x$

e) Find $f(g(x))=$

$=7-3(-3x^2+1)$

$=7+9x^2-3$

$=9x^2+4$

f) Find $f(x)+g(x)=$

$7-3x+(-3x^2+1)$

$=-3x^2-3x+8$

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3) Identify the following given the graph of the function.

$f(3)=5$

x-intercept(s): $(2,0)$ $(-2,0)$

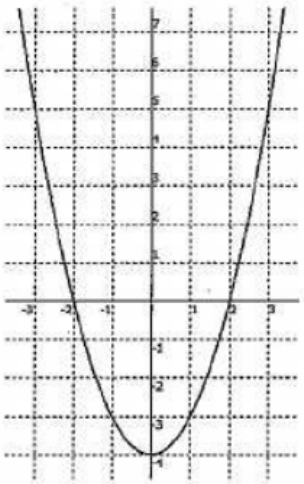
y-intercept: $(0,-4)$

Write the equation of the function: $f(x)=x^2-4$

Identify the domain: $\mathbb{R}$

Identify the range: $y\geq-4$

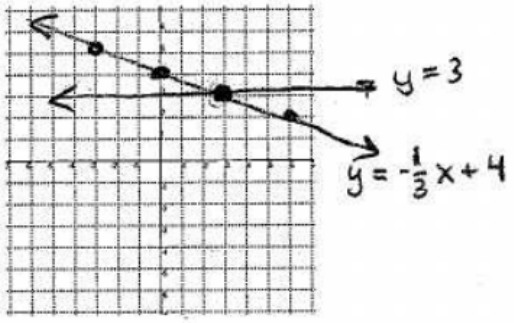
$f(x)=$



4) **Solve by graphing.**

a) $\begin{cases} y = -\frac{1}{3}x + 4 \\ y = 3 \end{cases}$ $m = -\frac{1}{3}$, $b = 4$

solution: (3, 3)

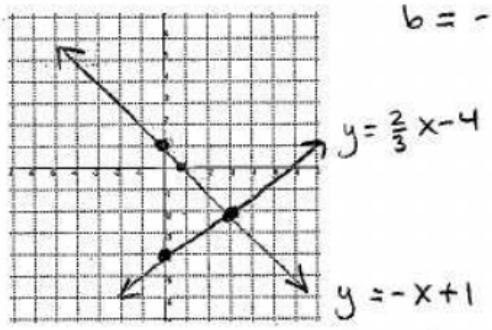


b) $\begin{cases} x + y = 1 \\ 2x - 3y = 12 \end{cases}$

$x + y = 1 \rightarrow y = -x + 1$, $m = -\frac{1}{1}$, $b = 1$

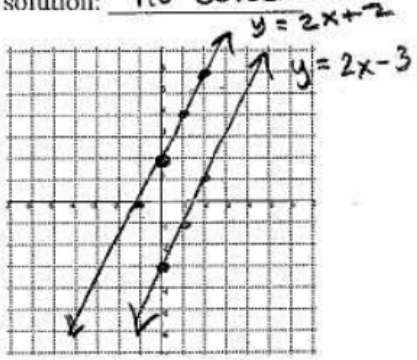
$2x - 3y = 12 \rightarrow -3y = -2x + 12 \rightarrow y = \frac{2}{3}x - 4$, $m = \frac{2}{3}$, $b = -4$

solution: (3, 2)



c) $\begin{cases} y = 2x + 2 \\ y = 2x - 3 \end{cases}$

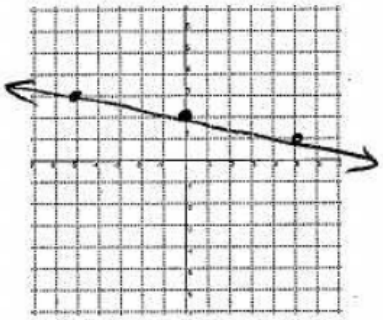
solution: no solution



d) $\begin{cases} x + 5y = 10 \\ -2x - 10y = -20 \end{cases} \rightarrow y = -\frac{1}{5}x + 2$

$y = -\frac{1}{5}x + 2$

solution: inf. many solutions



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5) **Solve using the substitution method.**

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

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

$8x - 12 + 3 = 5x$

$8x - 9 = 5x$

$3x = 9$

$x = 3$

$2(3) - 3 = y$

$6 - 3 = y$

$3 = y$

solution: (3, 3)

b) $\begin{cases} 2x + 3y = 5 \\ x - 5y = 9 \end{cases} \rightarrow x = 5y + 9$

$2(5y + 9) + 3y = 5$

$10y + 18 + 3y = 5$

$13y = -13$

$y = -1$

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

$2x - 3 = 5$

$2x = 8$

$x = 4$

solution: (4, -1)

6) **Solve using the elimination method (linear combination method).**

a) $\begin{cases} 5x+7y=11 \\ -5x+3y=19 \end{cases}$

$10y=30$

$y=3$

$5x+7(3)=11$

$5x+21=11$

$5x=-10$

$x=-2$

solution: $(-2,3)$

b) $\begin{cases} 2x-5y=10 \\ 4y=-15+3x \end{cases}$

$3(2x-5y=10)$

$2(-3x+4y=-15)$

$6x-15y=30$

$-6x+8y=-30$

$-7y=0$

$y=0$

$2x-5(0)=10$

$2x=10$

$x=5$

solution: $(5,0)$

---

7) **Solve using the method of your choice.**

a) $\begin{cases} x-2y=-6 \\ 2y=-10+5x \end{cases}$

$x-2y=-6$

$x=2y-6$

$2y=-10+5(2y-6)$

$2y=-10+10y-30$

$2y=10y-40$

$-8y=-40$

$y=5$

$x=2(5)-6$

$x=4$

solution: $(4,5)$

b) $\begin{cases} -2x+y=6 \\ 4x-2y=5 \end{cases}$

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

$4x-2y=5$

$-4x+2y=12$

$4x-2y=5$

$0=17$

solution: no solution

---

8) **Solve each word problem.** Your answers *must* be in the form of a sentence for full credit.

a. You are in charge of buying balloons for the upcoming prom. You want to use both latex and mylar balloons. The latex balloons cost \$0.10 each and the mylar balloons cost \$0.50 each. You need 125 balloons and you have \$32.50 to spend. How many of each kind of balloon can you purchase?

L: latex
M: mylar

$\begin{cases} 0.10L+0.50M=32.50 \\ L+M=125 \end{cases}$

$M=125-L$

Using substitution

$0.10L+0.50(125-L)=32.50$

$0.10L+62.50-0.50L=32.50$

$-0.40L=-30$

$L=75$

$M=125-75$

$M=50$

solution: I should purchase 75 latex balloons and 50 mylar balloons.

x: first number
y: second number

b. The sum a number and another number is -42. The first number minus the second number is 52. Find the numbers. Remember: Your answer *must* be in the form of a sentence for full credit.

If you use substitution

$x + y = -42$
$x - y = 52$

$x = 52 + y$

plug into 1st equation

$(52+y) + y = -42$
$52 + 2y = -42$
$2y = -94$
$y = -47$

$x = 52 + (-47)$
$x = 5$

solution: One of the numbers is 5 and the other number is -47.

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9) Graph the system of inequalities to determine the solution area.

a. $\begin{cases} y \geq -2x+1 \\ x < 3 \end{cases}$ $m=-2$ $b=1$

b. $\begin{cases} x+2y \geq -6 \\ -x+2y < 2 \end{cases}$

$\begin{cases} y \geq -\frac{1}{2}x - 3 \\ y < \frac{1}{2}x + 1 \end{cases}$

c. $-2 < y \leq 3$