

Art Project
DUE MONDAY / TUESDAY DECEMBER 10-11, 2011

Objective:

1. Make a drawing using piecewise functions and relations from a specified list of equations accordingly: •
Mathematical knowledge: Demonstrate knowledge of the properties of the graphs Linear Equations and *piecewise functions (were going to learn this along the way)*.
2. *Strategic knowledge:* Analyze the domains needed and demonstrate both the equations with appropriate domains and the final design.
3. *Explanation:* Explain completely and clearly what was done and why it was done.

Procedures:

1. *In order to interpret and describe numerical LINEAR relationships using tables, graphs, and symbols*, students should experience sufficient learning opportunities to develop the following:

• Note: Students should be familiar with GRAPHING LINEAR EQUATIONS, converting to standard form a finding the domain and range limitations of each of their art piece. Use a variety of symbolic representations for functions and relations, including *piecewise* functions.

2. Provide each student a copy of the "Art Project" task sheet and the rubric. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it.

3. Ask students to complete the following task:

- Using graph paper, draw a picture containing only graphs of lines. The picture must be composed of a minimum of 20 different equations half of the equations need to be in Standard form. There must be a minimum of:
 - 3 horizontal lines
 - 3 vertical lines
 - 3 positive lines
 - 3 negative lines
 - 2 single points
 - **The remaining lines may be combination of the previous**
- 1 digital copy will be submitted online via the vault and 1 Hard copy (printed out on paper)
 - The hard copy must be colored and visually appealing.
- 4. Students will be graded on the correct completion of the work by the **ASSIGNED DUE DATE!!!** Because this is the end of the semester LATE WORK will not be accepted because of the time constraints.

Time Requirements

Students are to complete the project outside of class and turn it in after three to five days

Resources

Class set of Macbook Computers with Program "Grapher"

Requirements checklist

20 different lines

- 3 horizontal lines
- 3 vertical lines
- 3 positive lines
- 3 negative lines
- 2 single points

Student must write 1 Paragraph MINIMUM of how their experiences. *What did you do, how did you choose your design, what challenges did you come across what did you learn from this assignment... etc...*

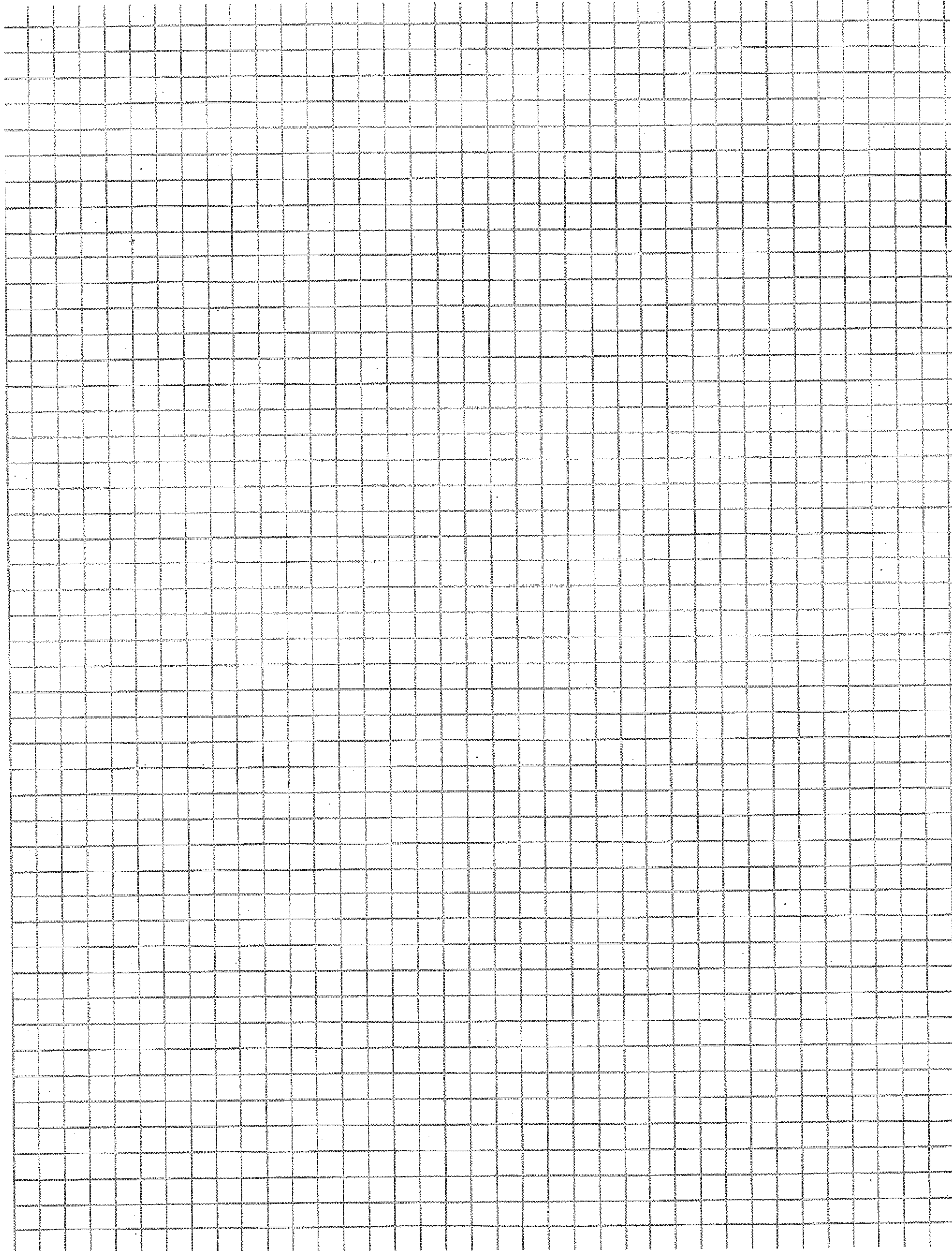
Grapher program used on MacBooks

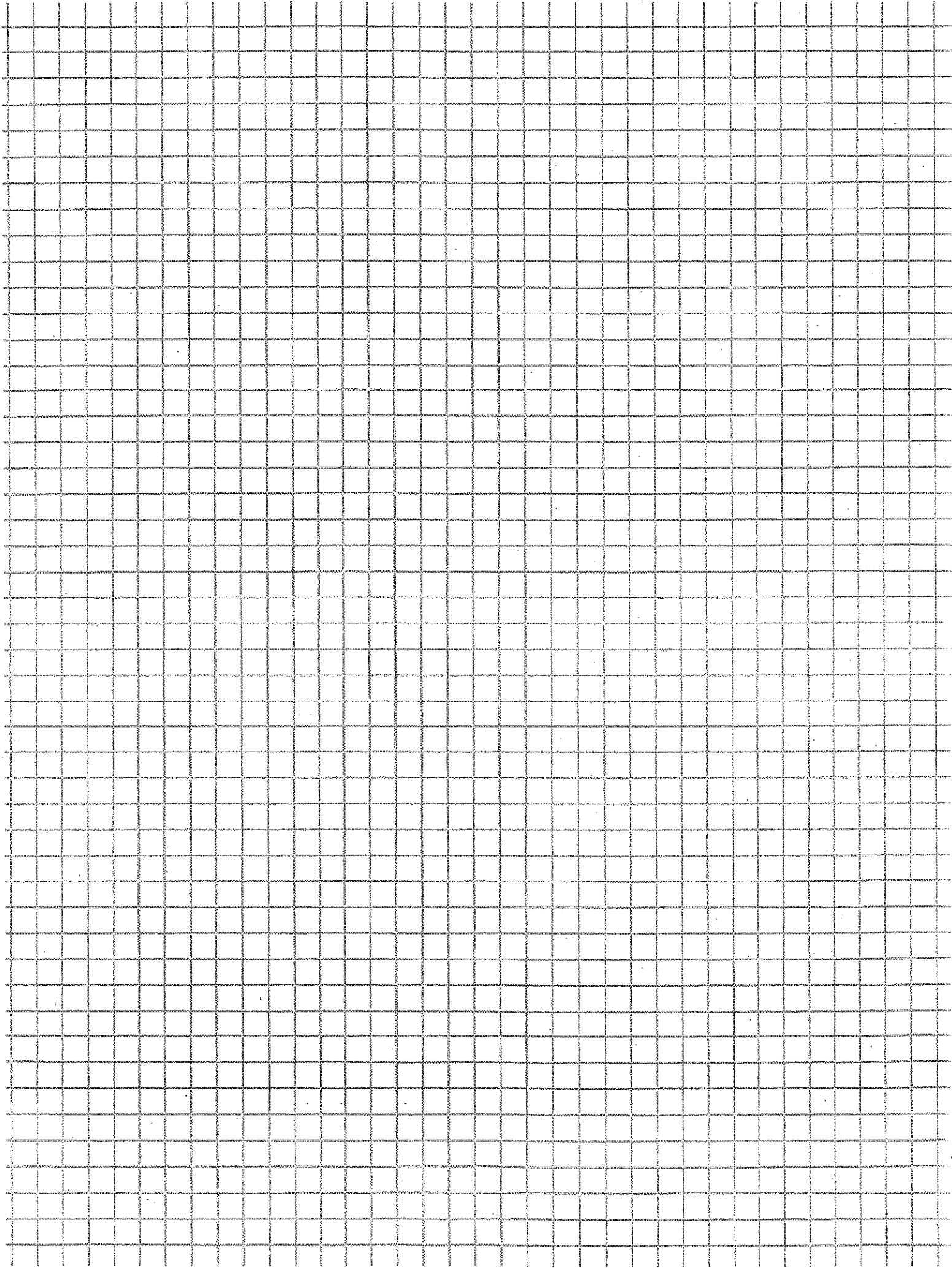
2 copies

- 1 digital (turn in on vault, file name: "LastnameFirstnameSEM1Project")
- 1 hard copy (drawn or printed, colored and pretty)
- + 1 page of equations

Turned in on time

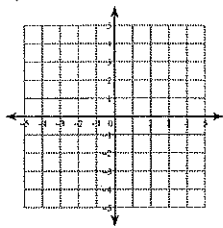
CATEGORY	4	3	2	1
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Errors	90-100% of the equations and solutions have no mathematical errors.	Almost all (85-89%) of the equations and solutions have no mathematical errors.	Most (75-84%) of the equations and solutions have no mathematical errors.	More than 75% of the equations and solutions have mathematical errors.
Neatness and Organization	The work is presented in a neat, clear, organized fashion that is easy to read.	The work is presented in a neat and organized fashion that is usually easy to read.	The work is presented in an organized fashion but may be hard to read at times.	The work appears sloppy and unorganized. It is hard to know what information goes together.
Completion	All problems are completed.	All but one of the problems are completed.	All but two of the problems are completed.	Several of the problems are not completed.
Mathematical Terminology and Notation	Correct terminology and notation are always used, making it easy to understand what was done.	Correct terminology and notation are usually used, making it fairly easy to understand what was done.	Correct terminology and notation are used, but it is sometimes not easy to understand what was done.	There is little use, or a lot of inappropriate use, of terminology and notation.



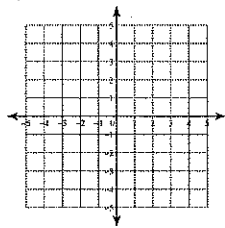


4A: Solve each system by graphing.

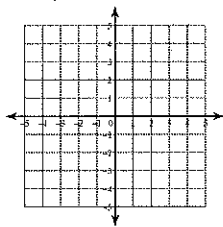
1) $y = -2x - 4$
 $y = 3x + 1$



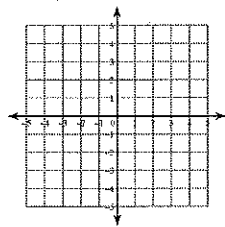
2) $y = -8x - 4$
 $y = -x + 3$



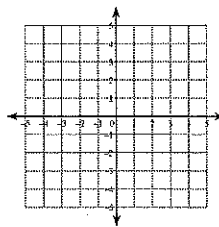
3) $2x - y = 2$
 $2x - 3y = -6$



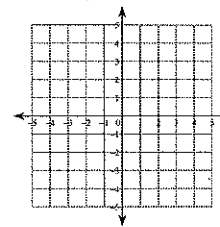
4) $2x + 3y = 12$
 $5x - 3y = 9$



5) $-9 = 3x + 3y$
 $-1 = x$



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



4B: Solve each system by substitution.

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

8) $y = -4x + 3$
 $y = 3x - 4$

9) $-3x + y = 18$
 $2x + 6y = 8$

10) $-3x - 5y = -14$
 $3x + y = 22$

11) $-8x - 7y = 6$
 $8x + 2y = 4$

12) $-4x + 12y = -8$
 $2x - 6y = -8$

4C: Solve each system by elimination.

13) $-2x - 6y = 12$
 $2x + 4y = -4$

14) $2x + y = -4$
 $-2x - 3y = 4$

15) $16x + 8y = 24$
 $4x + 2y = 2$

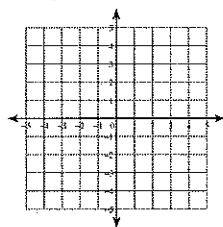
16) $-2x - 2y = -2$
 $6x + y = 21$

17) $4y + 6 = -5x$
 $-11x = 6y + 2$

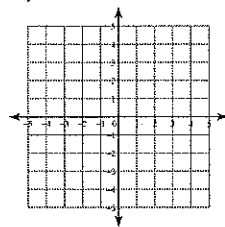
18) $99 + 9x = 36y$
 $-30y + 12x = -60$

4D: Sketch the solution to each system of inequalities.

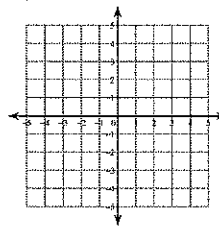
19) $x < -2$
 $y < \frac{3}{2}x + 1$



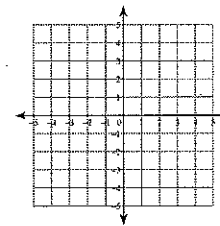
20) $y \leq -x - 3$
 $y \leq 3x + 1$



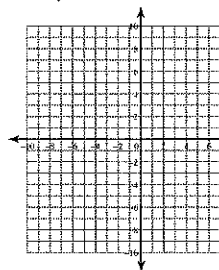
21) $y \leq -x + 3$
 $y > 2x - 3$



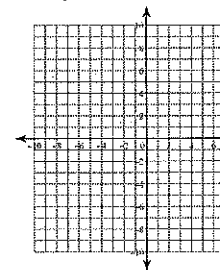
22) $y \leq -5x - 3$
 $y < -x + 1$



23) $2x - y < 5$
 $x + 5y \geq 30$

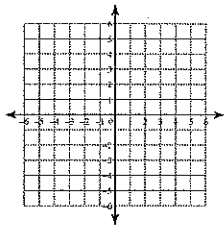


24) $5x + 2y > -12$
 $x - 4y \geq -20$

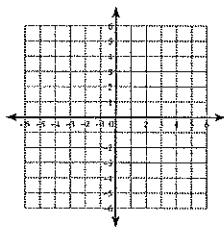


3D: Sketch the graph of each line.

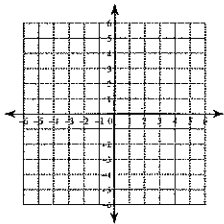
25) $x = -1$



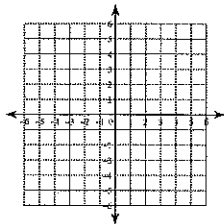
26) $y = -\frac{3}{2}x$



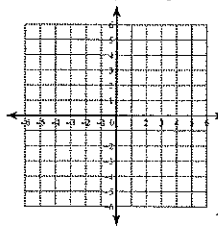
27) $4x + 5y = 5$



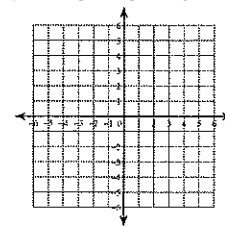
28) $5x + 2y = 4$



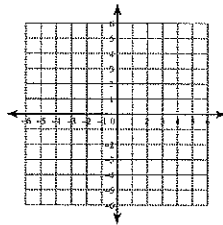
29) x-intercept = 5, y-intercept = -2



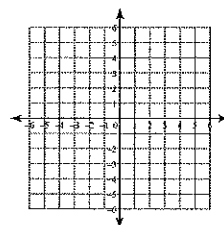
30) x-intercept = -4, y-intercept = -5



31) $y < -3x + 5$

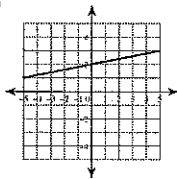


32) $y > \frac{2}{5}x + 3$

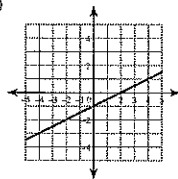


3F: Write the equation of a line given the graph

33)



34)



3D: Write the equation of a line given the Slope and Y-intercept

35) Slope = 4, y-intercept = 2

36) Slope = $\frac{7}{5}$, y-intercept = 3

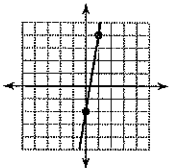
3D: Write the equation of the line slope intercept form ($y = mx + b$)

37) $2x + 7y = 21$

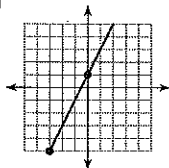
38) $3x + 7y = 28$

3C: Find the slope of each line.

39)



40)



41) $(-18, 0), (20, 5)$

42) $(10, 17), (-12, 8)$

43) $y = x + 1$

44) $y = \frac{7}{4}x - 5$

2B: Solve each equation.

45) $-66 = 2(3 + 6b)$

46) $5(2 - 6n) = 70$

47) $-6n - 6(5n - 1) = -28 - 2n$

48) $-4b + 27 = 5 + 2(-4b + 1)$

49) $-3(x + 1) = -(4 + 3x)$

50) $-(4 - 3x) = 2(2x - 4)$