

Show all work for partial credit. Please write on the test. The use of scratch paper is allowed but must be numbered accordingly and attached to the test. Good luck!

10 each

1. Solve $4 - 3x = -5(1 + 2x)$ algebraically.

$$\begin{array}{r} 4 - 3x = -5 - 10x \\ -4 \quad +10x \quad -4 \quad +10x \\ \hline \end{array}$$

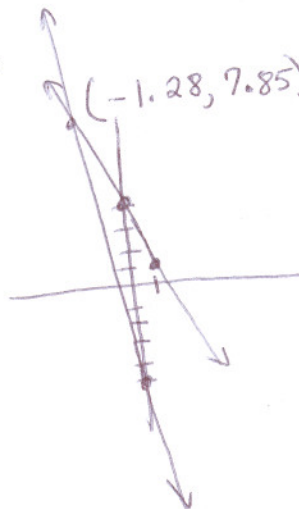
$$7x = -9$$

$$x = \frac{-9}{7}$$

2. Solve $4 - 3x = -5(1 + 2x)$ graphically.

$$Y_1 = 4 - 3x$$

$$Y_2 = -5(1 + 2x)$$



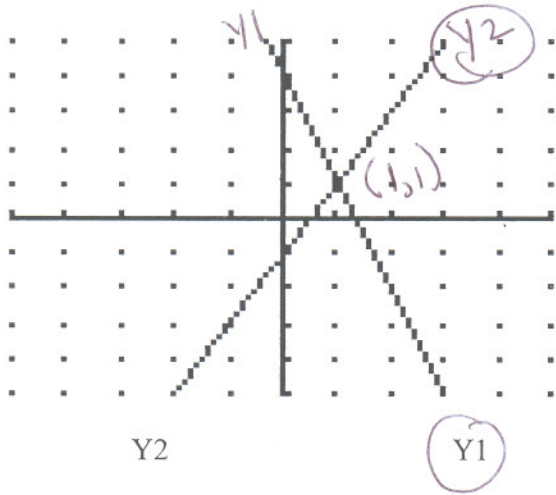
$$x = -1.28$$

3. Use the table to solve **an equation** (not a system of equations) where $Y_1 = Y_2$ where Y_1 equals the left side of the equation and Y_2 equals the right side of the equation.

x	Y1	Y2
-2	8	5
-1	6	6
0	4	7
1	2	8
2	0	9

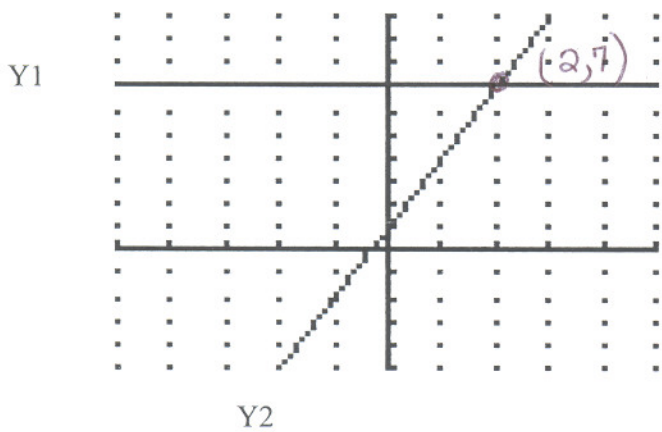
$$x = -1$$

4. Use the graph to solve **an inequality** (not a system of inequalities) where $Y1 < Y2$ where $Y1$ equals the left side of the inequality and $Y2$ equals the right side of the inequality. Each tick mark represents one unit.



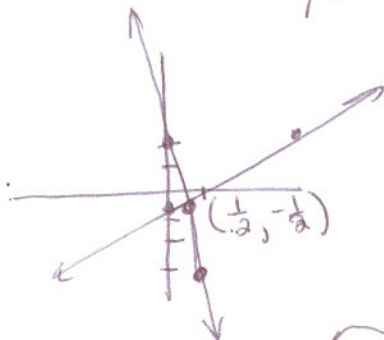
$$x > 1$$

5. Use the graph to solve a **system of equations** for $Y1=Y2$ where $Y1$ equals the first equation and $Y2$ equals the second equation. Each tick mark represents one unit.



$$\begin{matrix} x = 2 \\ y = 7 \end{matrix}$$

6. Solve graphically. $\begin{cases} 3x - 5y = 4 \\ 5x + y = 2 \end{cases}$ $y = (-3x + 4) / -5$
 $y = -5x + 2$



$$\begin{cases} x = \frac{1}{2} \\ y = -\frac{1}{2} \end{cases}$$

7. Solve by substitution method. $\begin{cases} 3x - 5y = 4 \\ 5x + y = 2 \end{cases}$ $y = -5x + 2$

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

$$3x + 25x - 10 = 4$$

$$28x - 10 = 4$$

$$+10 \quad +10$$

$$\frac{28x}{28} = \frac{14}{28}$$

$$x = \frac{1}{2}$$

$$y = -5\left(\frac{1}{2}\right) + 2$$

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

$$y = -\frac{5}{2} + \frac{4}{2}$$

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

8. Solve by elimination method. $\begin{cases} 3x - 5y = 4 \\ (5x + y = 2) (5) \end{cases}$

$$\begin{array}{r} 3x - 5y = 4 \\ + 25x + 5y = 10 \\ \hline 28x \quad = 14 \end{array}$$

$$\frac{28x}{28} = \frac{14}{28}$$

$$x = \frac{1}{2}$$

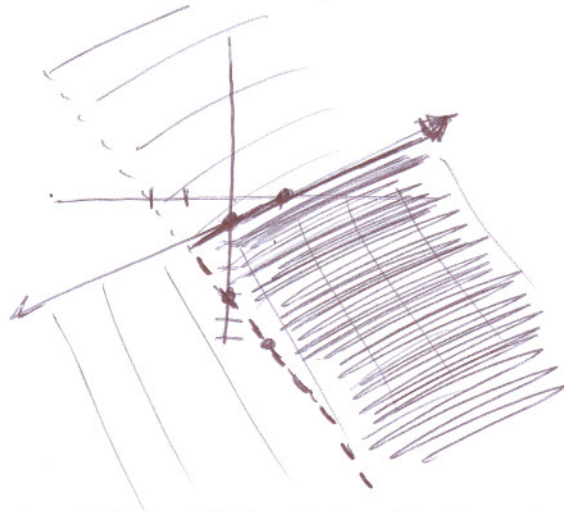
$$5\left(\frac{1}{2}\right) + y = 2$$

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

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

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

9. Graph the system of inequalities. $\begin{cases} y > -2x - 4 \\ y \leq x - 1 \end{cases}$



10. A chemist mixes 2 liters of 60% sulfuric acid with another sample of 30% sulfuric acid to obtain a sample of 50% sulfuric acid. How much of the 30% was used? **Set up the equation or system of equations to solve the problem. Do not solve.**

$$\begin{array}{ccccc} \textcircled{60\%} & + & \textcircled{30\%} & = & \textcircled{50\%} \\ \text{2 liters} & & x & & 2+x = y \end{array}$$

$$\boxed{.60(2) + .30(x) = .50(2+x)}$$

OR

$$\begin{cases} .60(2) + .30(x) = .50(y) \\ y = 2+x \end{cases}$$