

Good morning!

1. "Here"
2. Begin Part 3 or Unit 1
3. Notes on Solving Systems of Equations by Graphing
4. Upload Practice (p. 5-10) to CTLS

Algebra 1

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Unit 1 – Part 3

Linear Functions

Monday	Tuesday	Wednesday	Thursday	Friday
Jan. 25 th	Jan. 26 th	Jan. 27 th	Jan. 28 th	Jan. 29 th
			Unit 1 Part 2 Quiz	Solving Systems by Graphing
Feb. 1 st	Feb. 2 nd	Feb. 3 rd	Feb. 4 th	Feb. 5 th
Solving Systems by Substitution	Solving Systems by Elimination Quiz	Quiz due at midnight	Systems of Equations Word Problems	Graphing Systems of Inequalities
Feb. 8 th	Feb. 9 th	Feb. 10 th	Feb. 11 th	Feb. 12 th
Graphing Systems of Inequalities	Review Test	Test due at midnight	Factoring by GCF	Factoring

BRACE YOURSELVES



**SYSTEMS OF EQUATIONS ARE
COMING**

Introduction to Systems of Equations

A system of linear equations consists of 2 or more linear equations that use the same variables.

The solution to a system of equations is the intersection or point that make ALL of the equations true.

Remember, a point is represented by an ordered pair (x, y) , $(\#, \#)$.

Determine if the given ordered pair is a solution to the system of equations.

1) $3x + 7y = 12$ Point: $(-3, 3)$ ^{x, y}
 $7x - y = -4$ **Not a solution!**

→ $3(-3) + 7(3) = 12$
 $-9 + 21$
 $12 = 12$ ✓

→ $7(-3) - (3) = -4$
 $-21 - 3$
 $-24 = -4$ ✗




2) $2x - 7 = -y$ Point: $(2, 3)$ ^{x, y}
 $-5x + 13 = y$ **Solution!**

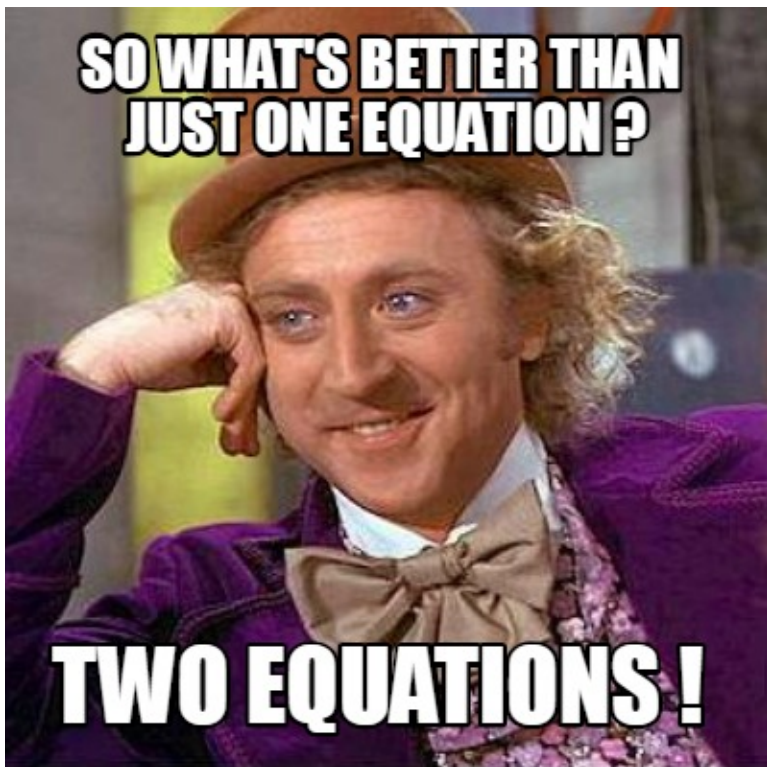
→ $2(2) - 7 = -(3)$
 $4 - 7 = -3$
 $-3 = -3$ ✓

→ $-5(2) + 13 = (3)$
 $-10 + 13 = 3$
 $3 = 3$ ✓

When you are solving for a system of equations, you can have 3 different types of solutions:

- ▶ One Solution
- ▶ No Solution
- ▶ Infinitely Many Solutions

One Solution	Independent System	Intersecting 
No Solution	Inconsistent System	Parallel 
Infinitely Many Solutions	Dependent System	Same Line Collinear 

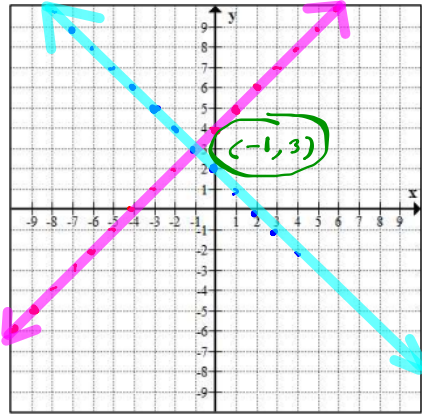


Solving Systems of Equations by Graphing

- Steps:**
- 1) Graph the first equation. $y = mx + b$
 - 2) Graph the second equation on the coordinate plane.
 - 3) Determine whether the lines intersect, are parallel, or are the same line.
 - 4) Identify the solution to the system and check it.

Examples

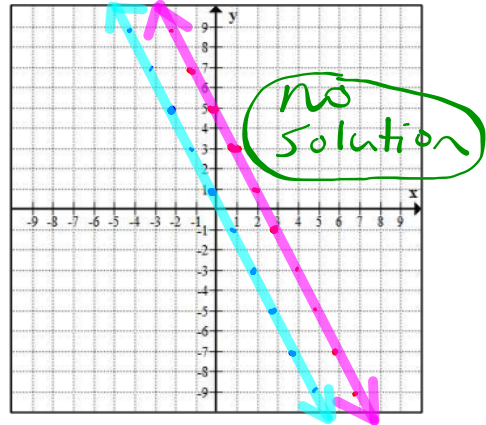
1) $2x - 2y = -8$
 $2x + 2y = 4$



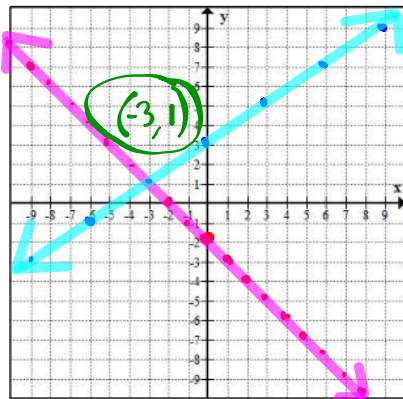
$$\begin{array}{r} 2x - 2y = -8 \\ -2x \quad -2x \\ \hline -2y = -2x - 8 \\ \quad -2 \quad -2 \\ \hline y = \frac{1}{2}x + 4 \end{array}$$

$$\begin{array}{r} 2x + 2y = 4 \\ -2x \quad -2x \\ \hline 2y = -2x + 4 \\ \quad 2 \quad 2 \\ \hline y = -\frac{1}{2}x + 2 \end{array}$$

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



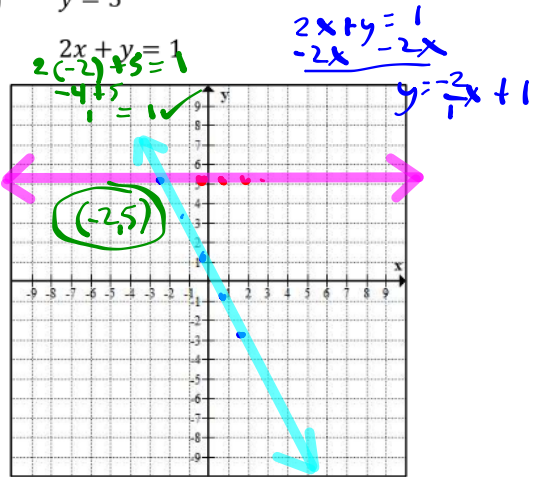
3) $x + y = -2$
 $2x - 3y = -9$



$$\begin{array}{r} x + y = -2 \\ -x \quad -x \\ \hline y = -\frac{1}{1}x - 2 \end{array}$$

$$\begin{array}{r} 2x - 3y = -9 \\ -2x \quad -2x \\ \hline -3y = -2x - 9 \\ \quad -3 \quad -3 \\ \hline y = \frac{2}{3}x + 3 \end{array}$$

4) $5 = 5$
 $y = 5$



$$\begin{array}{r} 2x + y = 1 \\ 2(-2) + 5 = 1 \\ -4 + 5 = 1 \\ \quad 1 \quad 1 \\ \hline \end{array}$$

$$\begin{array}{r} 2x + y = 1 \\ -2x \quad -2x \\ \hline y = \frac{-1}{1}x + 1 \end{array}$$

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

$$\boxed{(-1, 3)}$$

$$2x + 2y = 4$$

$$2(-1) - 2(3) = -8$$

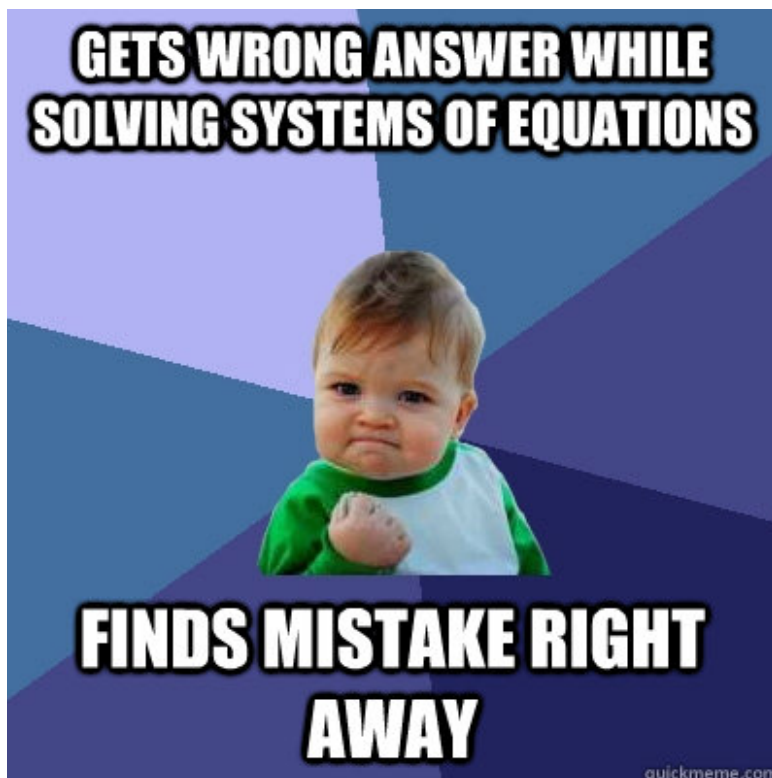
$$-2 - 6 = -8$$

$$-8 = -8 \quad \checkmark$$

$$2(-1) + 2(3) = 4$$

$$-2 + 6 = 4$$

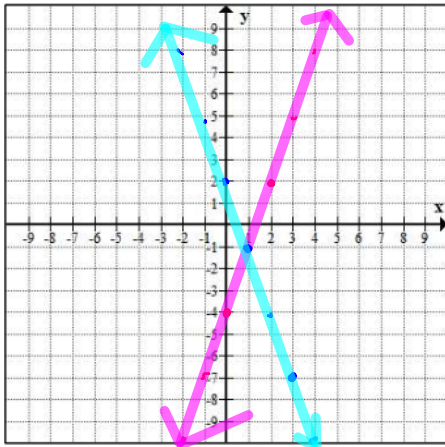
$$4 = 4 \quad \checkmark$$



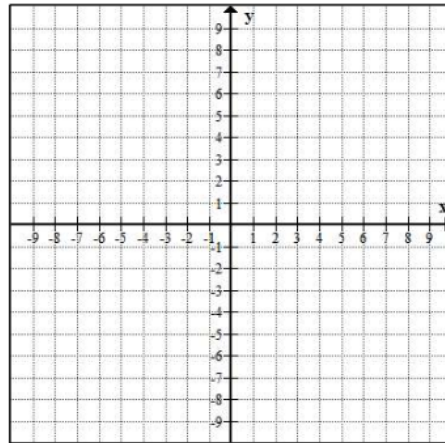
Graphing Systems of Equations Practice

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

$(1, -1)$

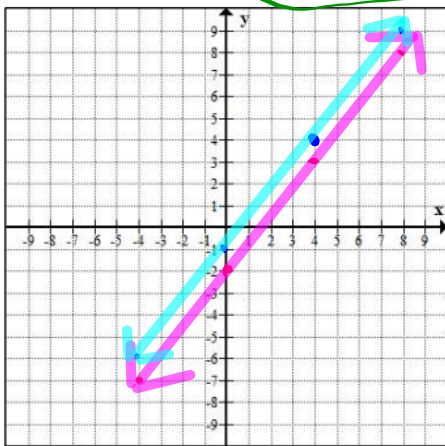


2) $y = \frac{4}{3}x + 3$
 $y = -\frac{2}{3}x - 3$

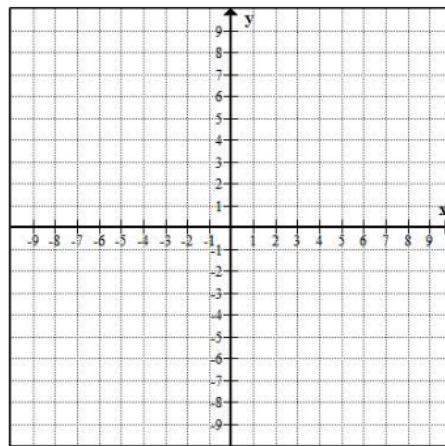


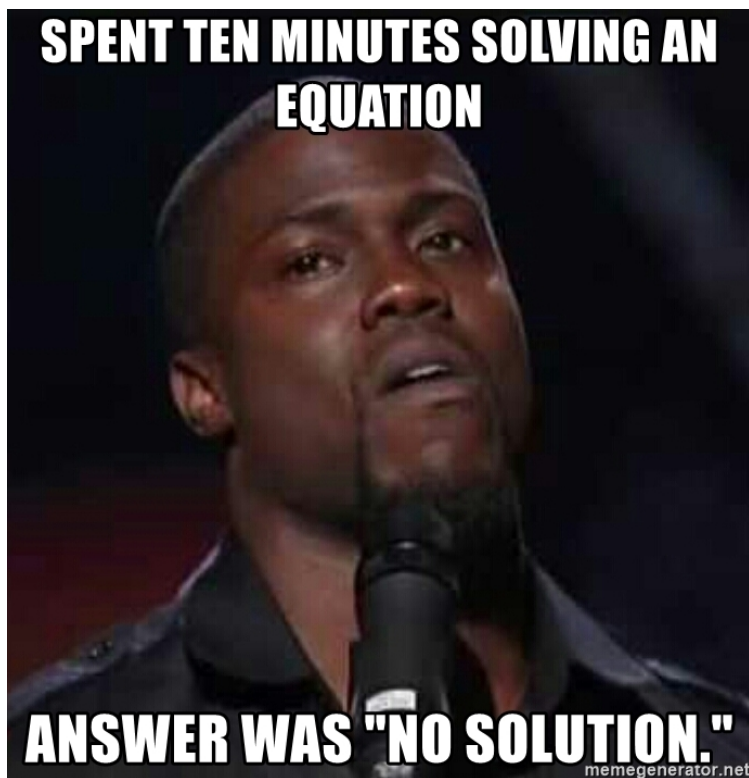
3) $y = \frac{5}{4}x - 2$
 $y = \frac{5}{4}x - 1$

no solution

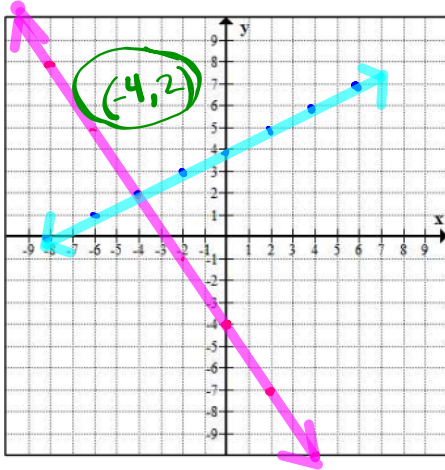


4) $y = \frac{1}{3}x + 2$
 $y = -x - 2$

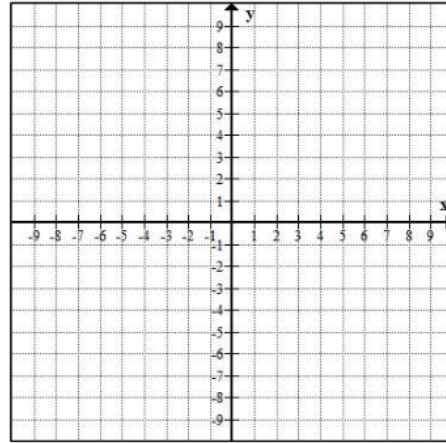




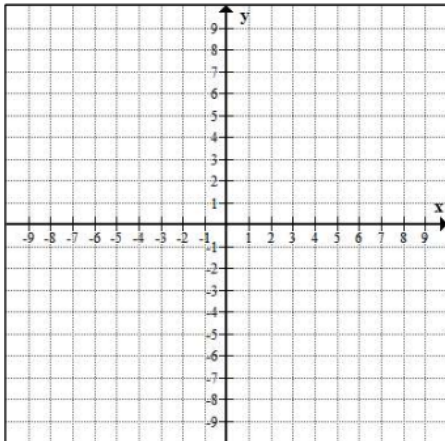
5) $y = -\frac{3}{2}x - 4$ ✓
 $y = \frac{1}{2}x + 4$ ✓



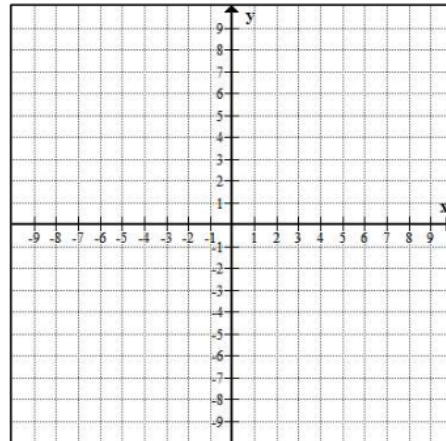
6) $y = 4x - 1$
 $y = -x + 4$

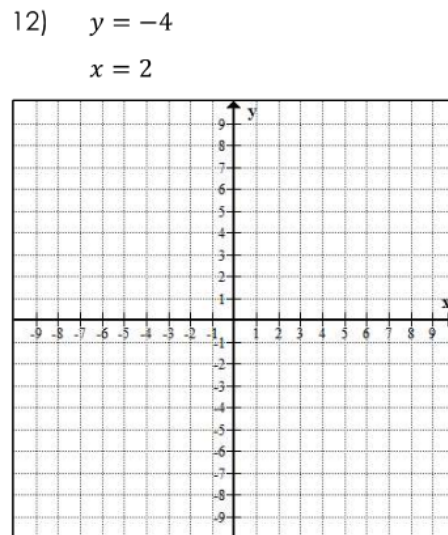
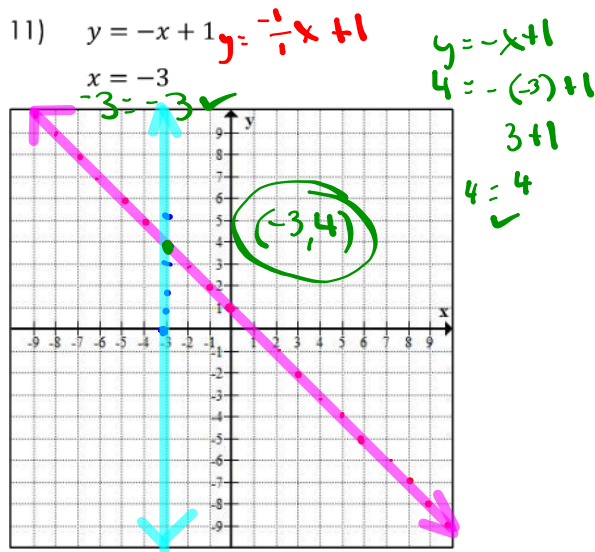
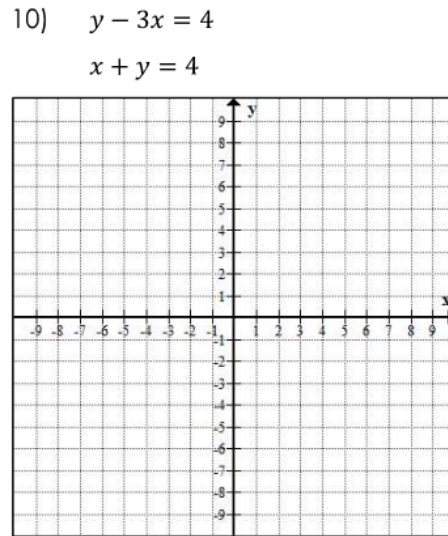
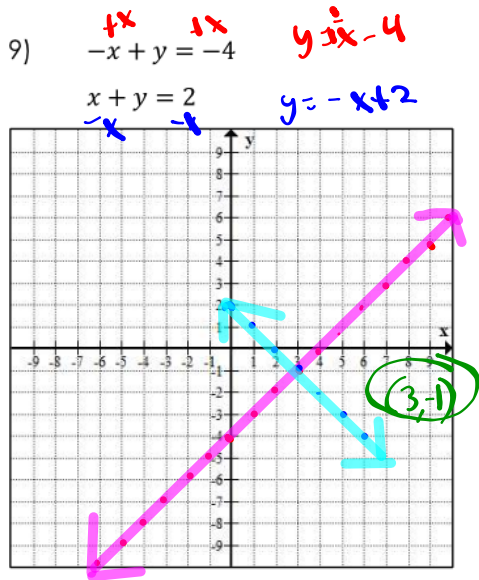


7) $y = \frac{3}{4}x + 1$
 $y = -\frac{1}{2}x - 4$



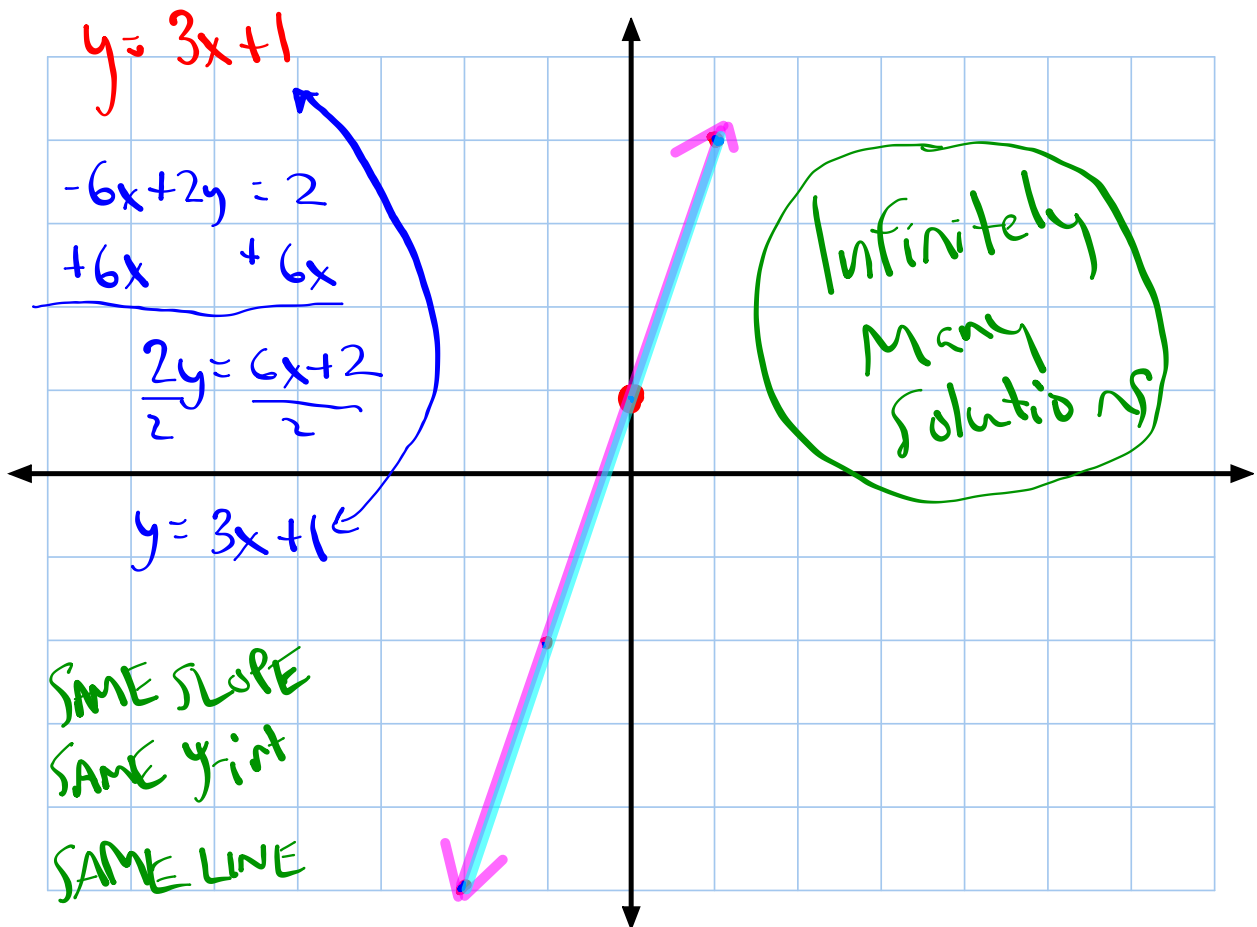
8) $2y + 3x = -6$
 $2x + y = 2$

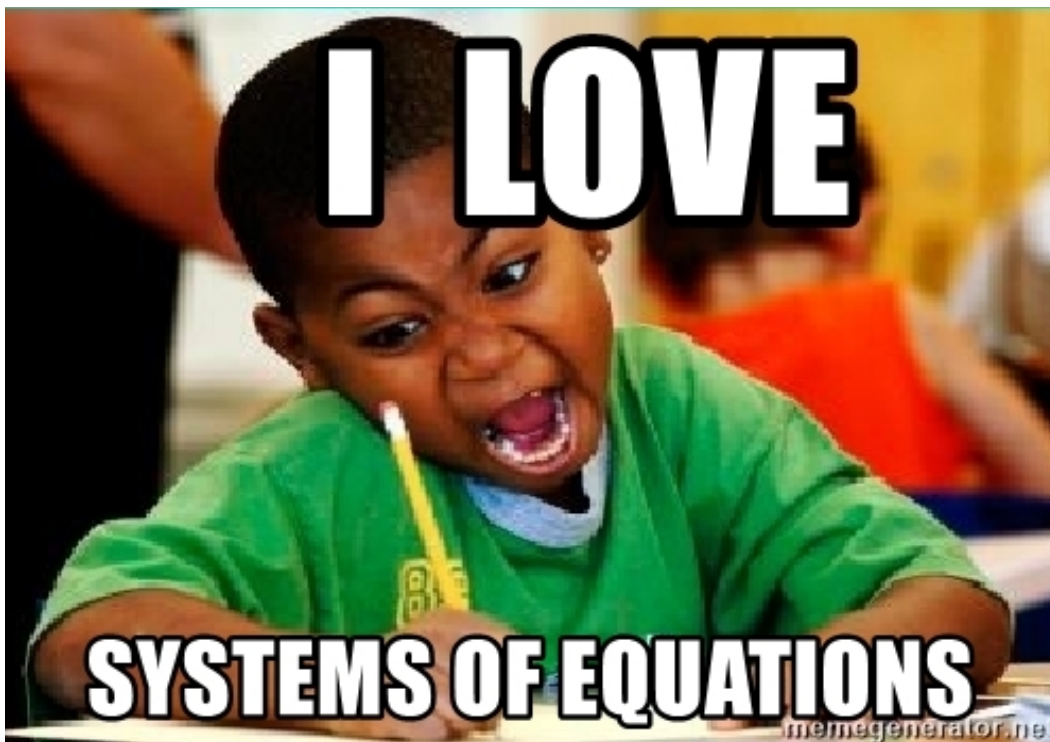




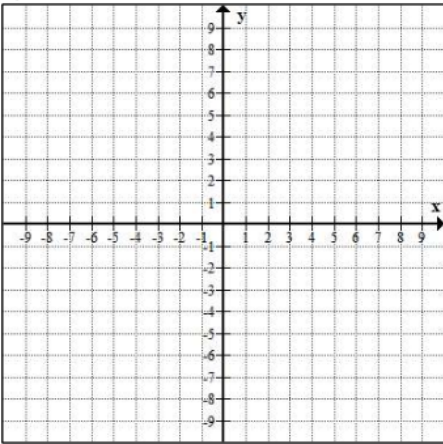
What do you notice?

- ▶ If two lines have the SAME SLOPE (m), and the SAME Y-INTERCEPT (b), then the system has Ininitely Many Solutions
- ▶ If two lines have the SAME SLOPE (m), but DIFFERENT Y-INTERCEPTS (b), then the system has No Solution
- ▶ If the lines have DIFFERENT SLOPES (m), then the system has One Solution regardless of if the y-intercepts are the same or different

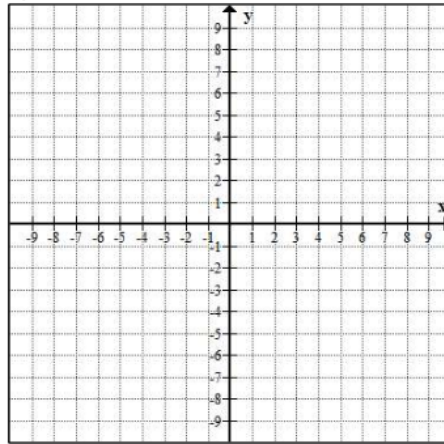




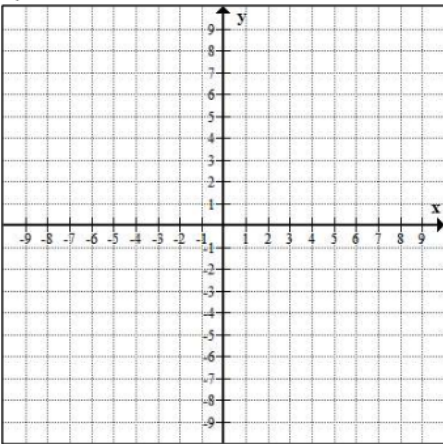
1)



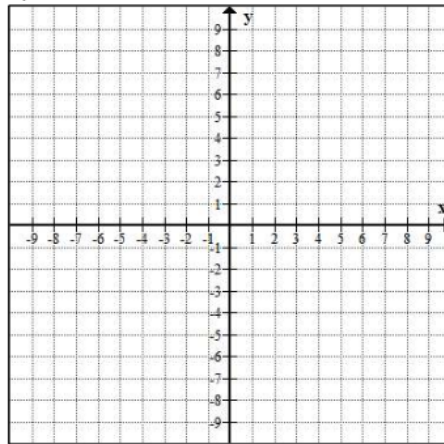
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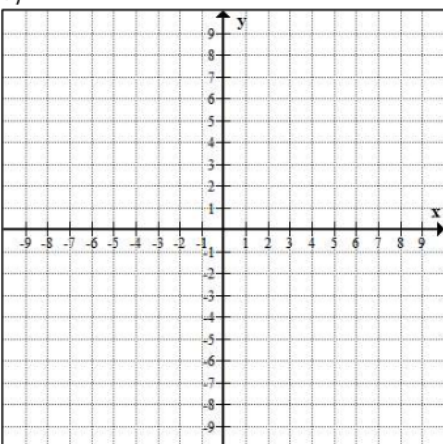
3)



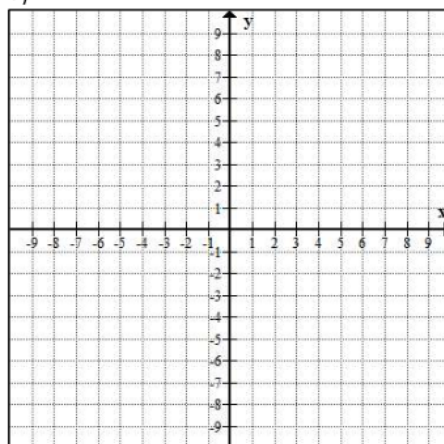
4)



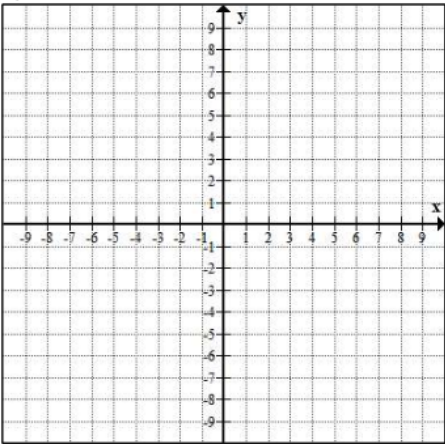
5)



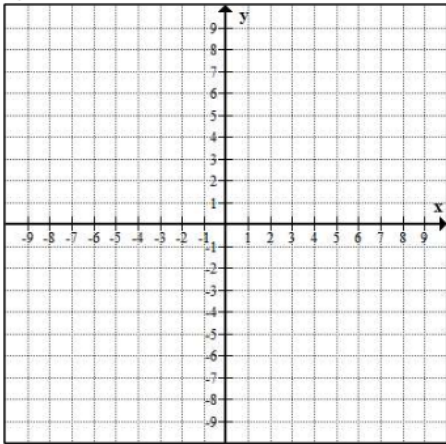
6)



7)



8)



9)

