Name: Date: DEC 9 Hour: Alg I

Unit 4 Day 7: Special Cases of Systems

Answer Question: What is the solution to a system when the lines don't intersect?

A. Using two different colors, graph the two lines below.

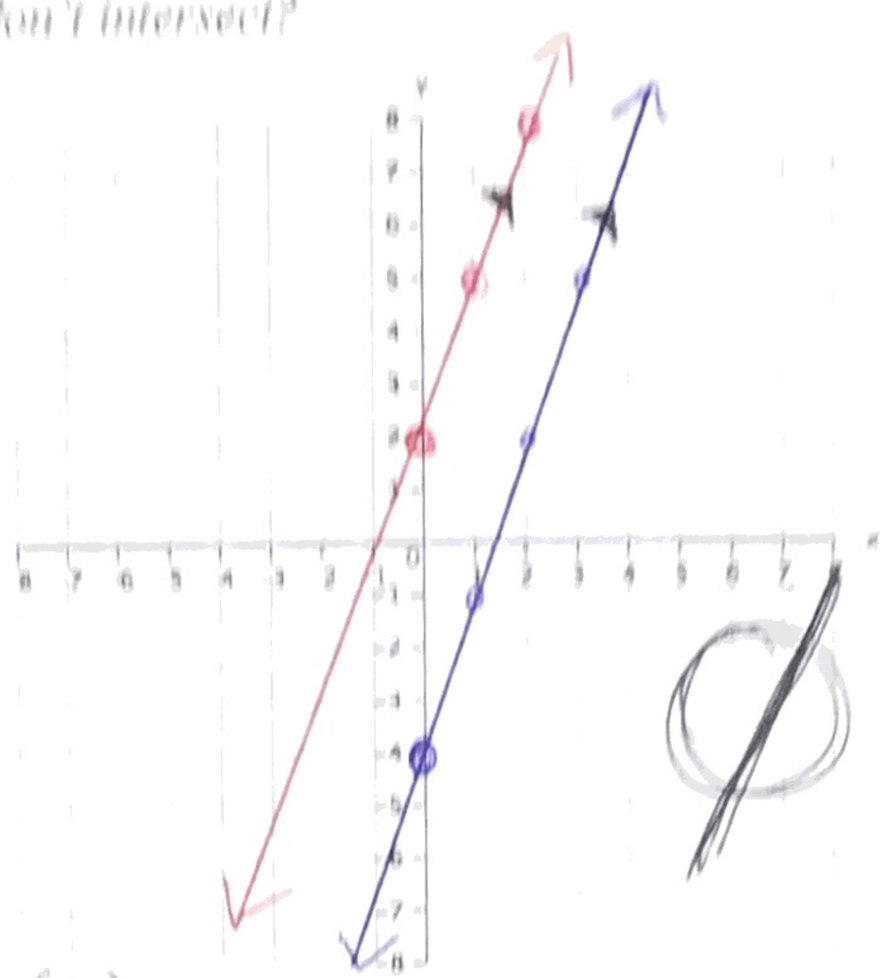
1. $y = 3x + 2$

2. $6x - 2y = 8$

$-6x \quad -6x$

$\frac{-2y}{-2} = \frac{-6x}{-2} + \frac{8}{-2}$

$y = 3x - 4$



3. What is the relationship of the two lines when graphed? They are parallel (//)

4. What is the relationship of the two lines when the equation is in slope intercept form?

$\begin{cases} y = 3x + 2 \\ y = 3x - 4 \end{cases}$ Same slope but diff. y int.

5. Is there a solution to the system? Explain.

No b/c they don't intersect.

B. Using two different colors, graph the two lines below.

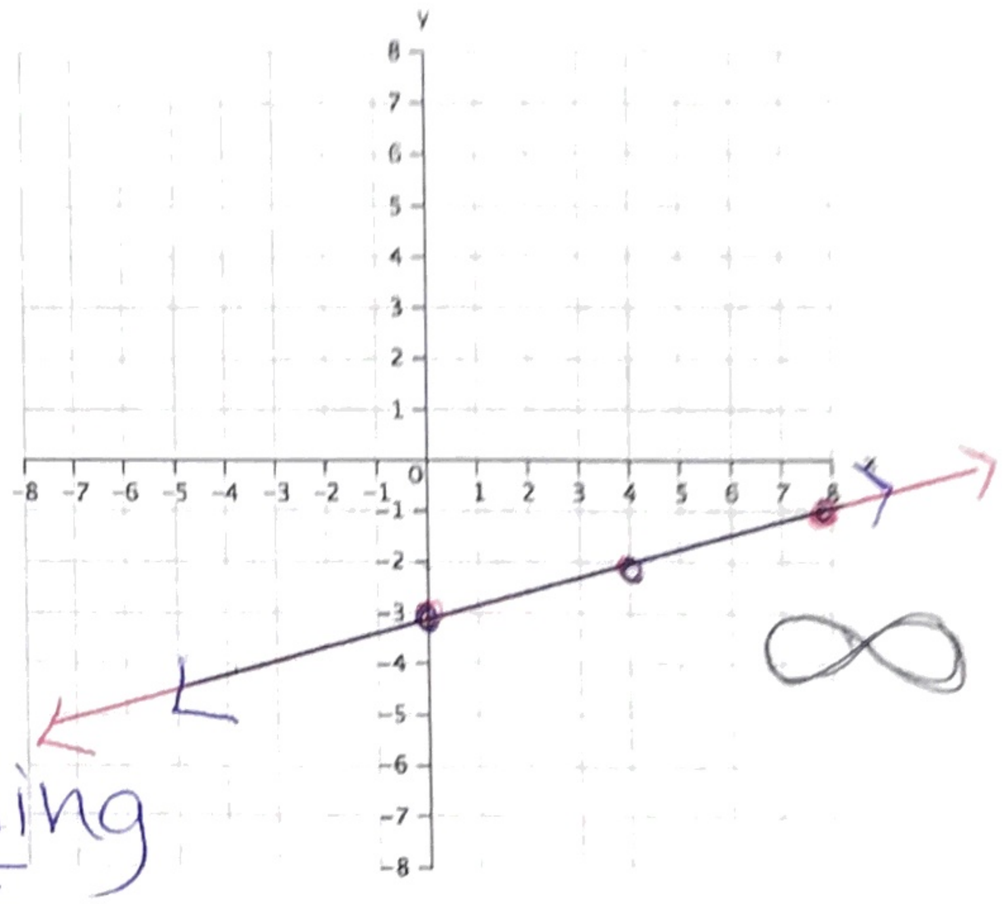
1. $y = \frac{1}{4}x - 3$

2. $x - 4y = 12$

$-x \quad -x$

$\frac{-4y}{-4} = \frac{-x}{-4} + \frac{12}{-4}$

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



3. What is the relationship of the two lines when graphed? Coinciding (on top of eachother)

4. What is the relationship of the two lines when the equation is in slope intercept form?

$\begin{cases} y = \frac{1}{4}x - 3 \\ y = \frac{1}{4}x - 3 \end{cases}$ Same Slope AND y int.

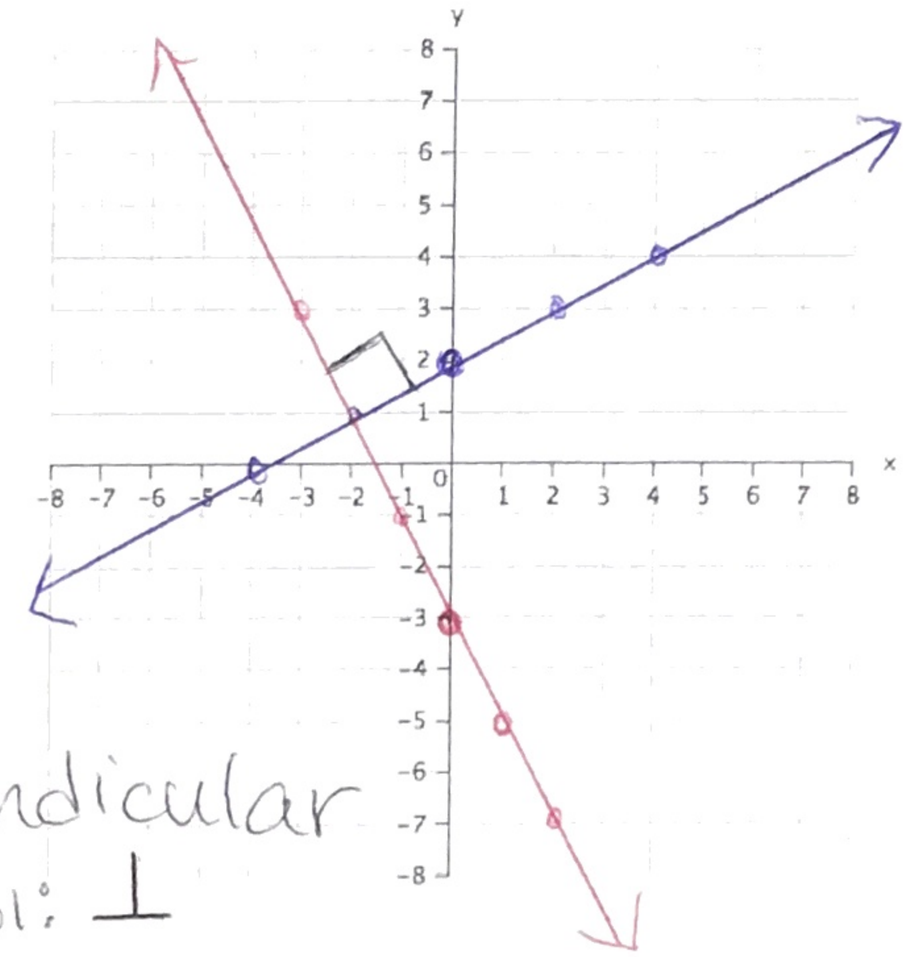
5. Is there a solution to the system? Explain.

Yes (∞) b/c they are touching the entire way

C. Using two different colors, graph the two lines below.

1. $y = -2x - 3$

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



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

3. What is the relationship of the two lines when graphed? Perpendicular (intersect at 90°) symbol: ⊥

4. What is the relationship of the two lines when the equation is in slope intercept form? diff. slopes (intersect) — & + Opposite
y int doesn't matter $\frac{1}{2}$ $\frac{2}{1}$ Reciprocals

5. Is there a solution to the system? Explain.
Yes b/c they intersect

D. Practice:

1. Tell how **without graphing** you can determine whether the system has…

a) no solution same slope but diff y int.

b) 1 solution diff. slopes

c) 1 perpendicular solution slopes are opp. reciprocals

d) infinite solutions same slope & same y int.

2. Determine if each system has no, infinite, or 1 solution. If its one solution determine if the lines are perpendicular.

a. $y = 4x + 3$

$3x + 12y = 24$
$-3x \quad -3x$

$\frac{12y}{12} = \frac{-3x}{12} + \frac{24}{12}$

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

1 sol'n, slopes are diff. Yes lines are ⊥ b/c slopes are opp. rec.

2. $y = -2x + 7$

$6x + 3y = -9$
$-6x \quad -6x$

$\frac{3y}{3} = \frac{-6x}{3} - \frac{9}{3}$

$y = -2x - 3$

∅ same slope but diff y int

3. $y = 3x + 7$

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

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

$y = 3x + 11$

∅ same slope but diff y int.

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

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

1 sol'n slopes are diff. Not ⊥ b/c slopes are not opp recip.