

## 7.1 - Solve System of Equations by Graphing

### Vocabulary:

System of Equations

Solution of Systems

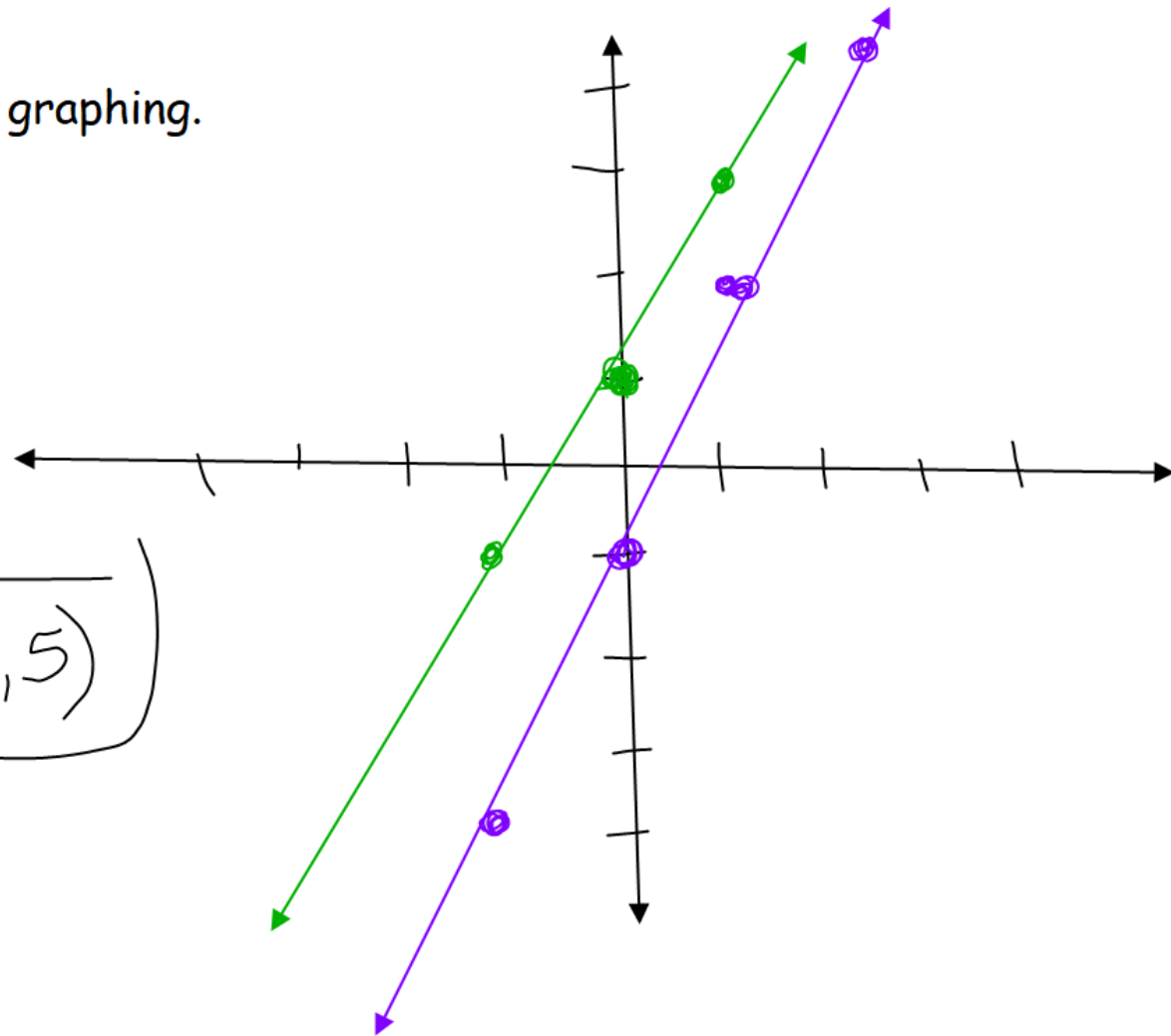
No Solution

Infinite Solutions

Solve the system by graphing.

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

$$(2, 5)$$

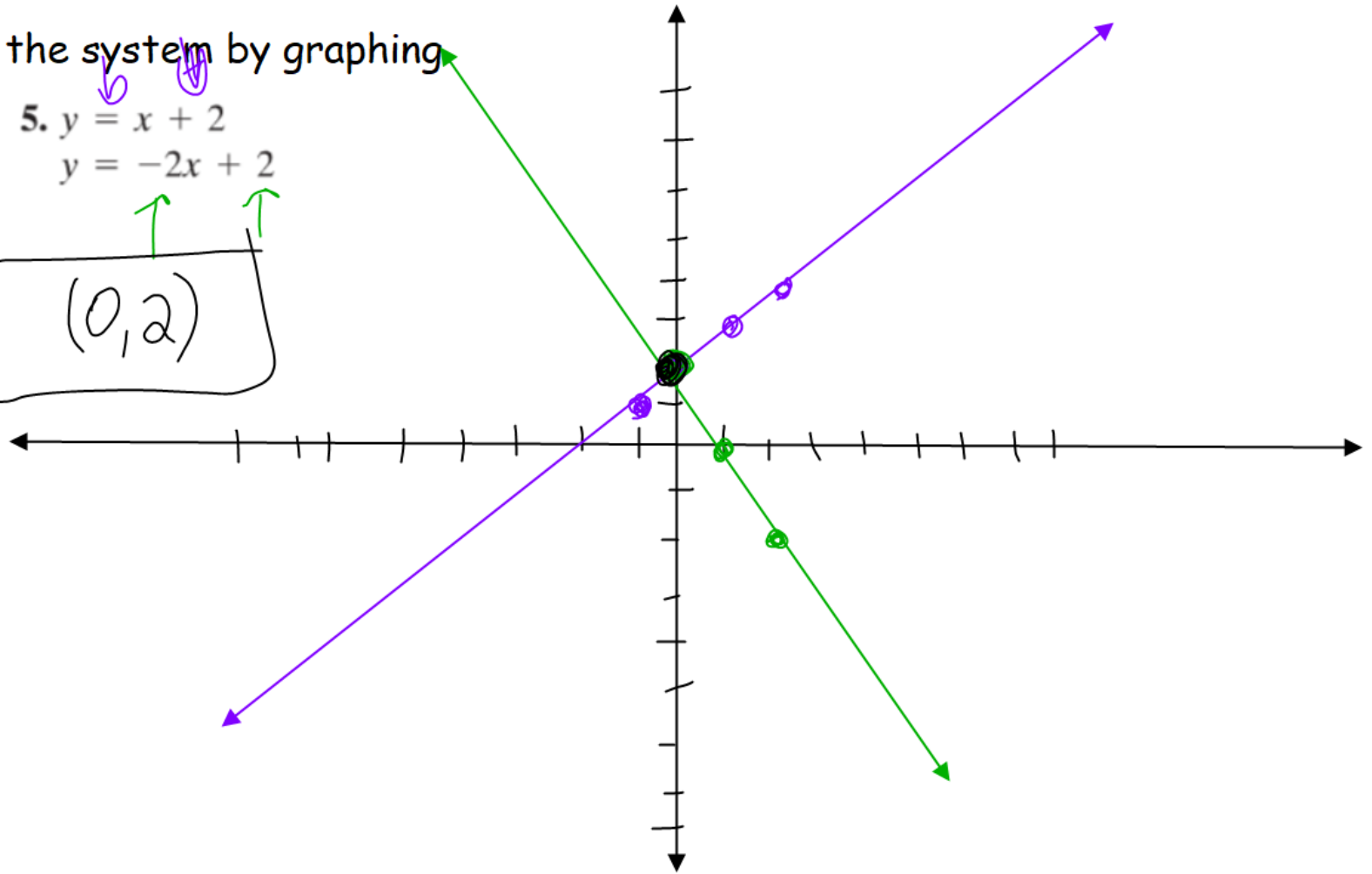


Solve the system by graphing

5.  $y = x + 2$

$y = -2x + 2$

$(0, 2)$



**2 EXAMPLE** Suppose you plan to start taking an aerobics class. Non-members pay \$4 per class while members pay \$10 a month plus an additional \$2 per class. Which system of equations models the cost as a function of classes?

nonmembers:  $y = 4x$

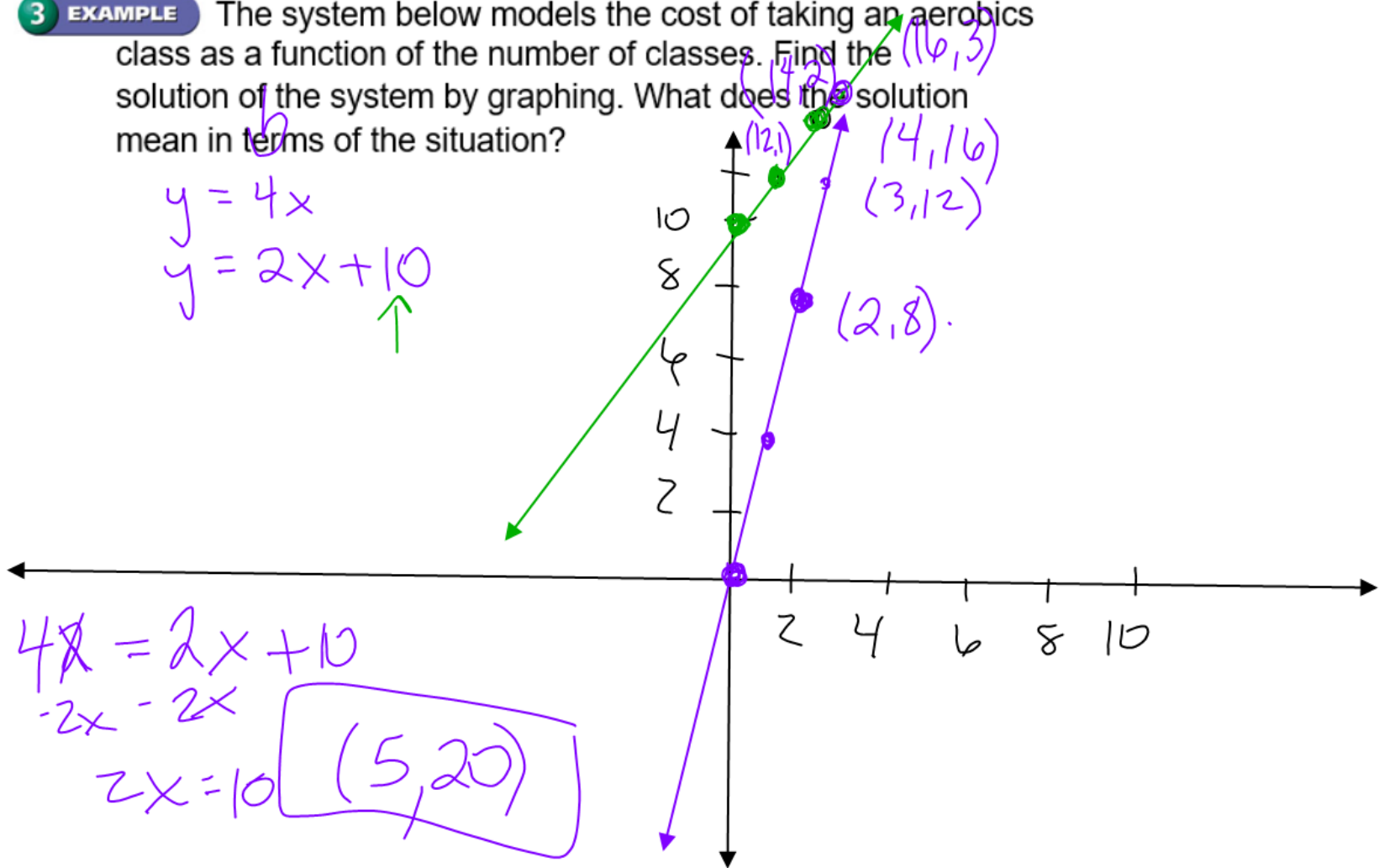
members:  $y = 2x + 10$

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**3 EXAMPLE** The system below models the cost of taking an aerobics class as a function of the number of classes. Find the solution of the system by graphing. What does the solution mean in terms of the situation?

$$y = 4x$$

$$y = 2x + 10$$



$$4x = 2x + 10$$

$$-2x - 2x$$

$$2x = 10 \quad \boxed{(5, 20)}$$

13. Suppose you have \$20 in your bank account. You start saving \$5 each week. Your friend has \$5 in his account and is saving \$10 each week. Assume that neither you nor your friend makes any withdrawals.
- a. After how many weeks will you and your friend have the same amount of money in your accounts? *2 weeks*
- b. How much money will each of you have?

$$\begin{array}{c} \text{you} \\ \hline 20 + 5x \\ - 5x \end{array} = \begin{array}{c} \text{friend} \\ \hline 10 + 10x \\ - 5x \end{array}$$

*\$30*

$$5(2) + 20$$

$$10 + 20$$

$$30$$

$$\begin{array}{r} 20 \\ - 10 \end{array} = \begin{array}{r} 10 \\ - 10 \end{array} + 5x$$

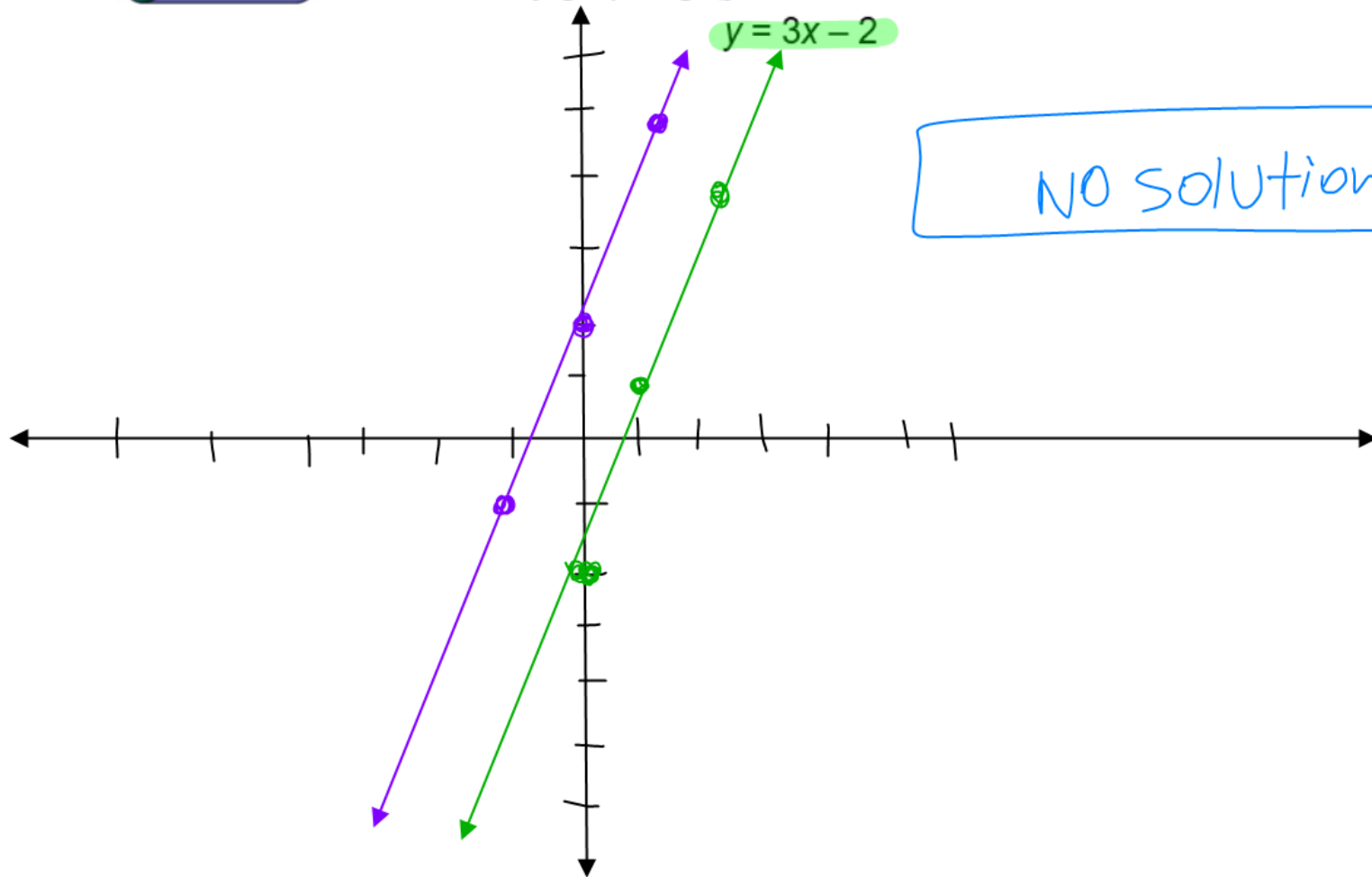
$$10 = 5x$$

$$2 = x$$

**4 EXAMPLE**

Solve by graphing.  $y = 3x + 2$

$y = 3x - 2$



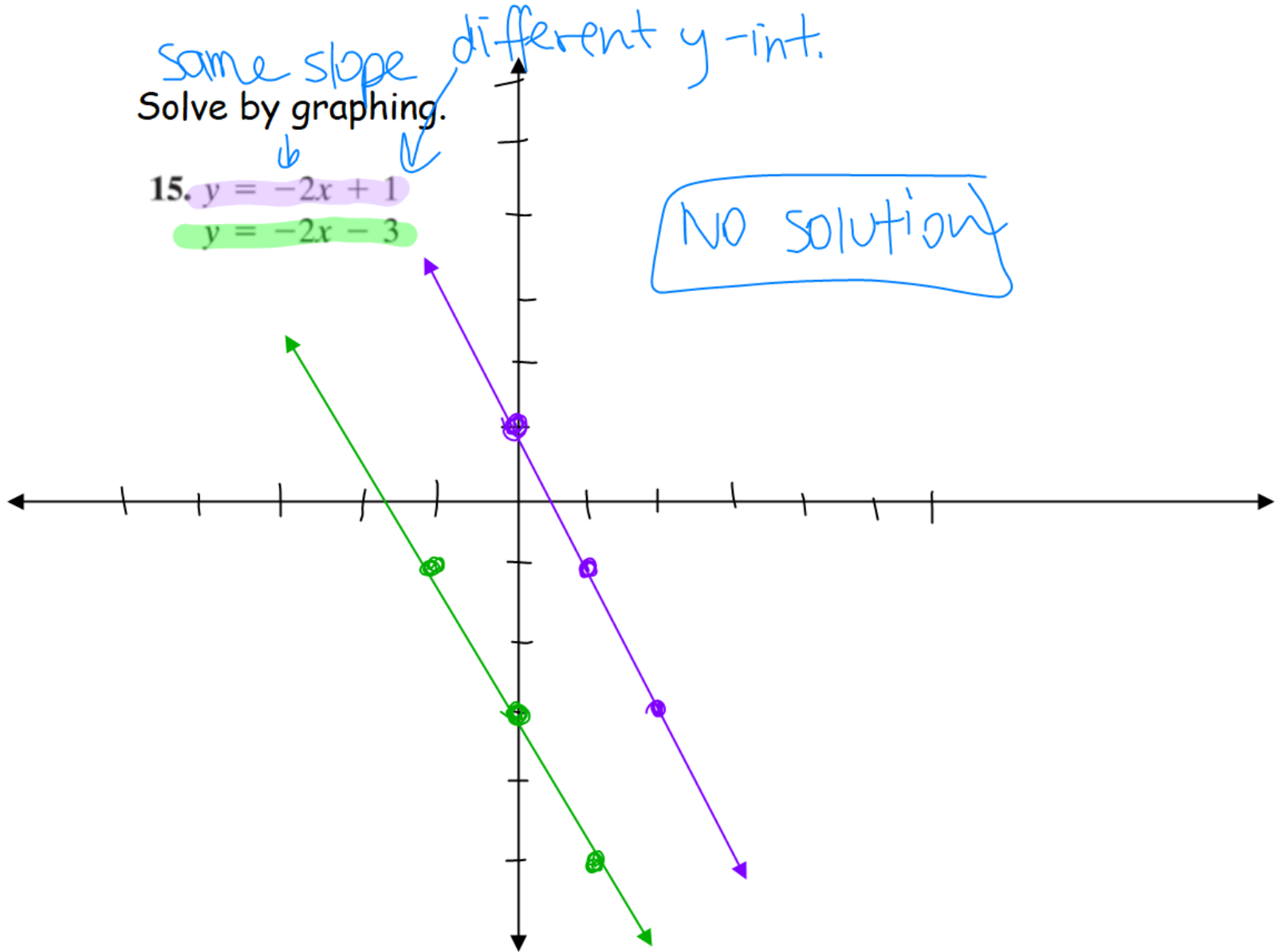
NO SOLUTION

same slope different y-int.  
Solve by graphing.

15.  $y = -2x + 1$

$y = -2x - 3$

NO SOLUTION





**5 EXAMPLE**

Solve by graphing.

$3x + 4y = 12$

← standard form

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

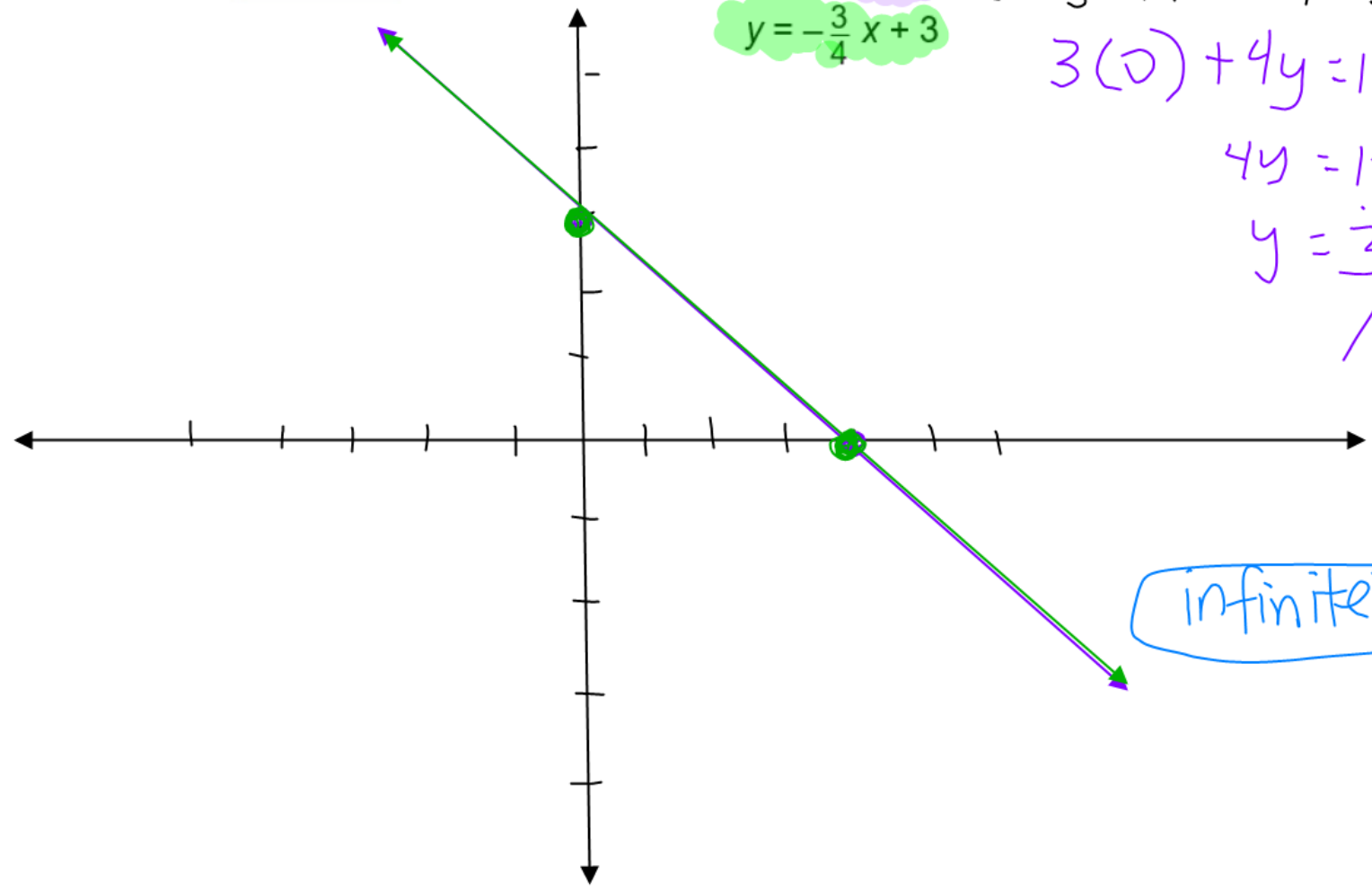
$3(0) + 4y = 12$

$4y = 12$

$y = 3$

$3x = 12$

$x = 4$



infinitely many

Solve by graphing.

$$20. \quad x + y = 4$$

$$2x + 2y = 8$$

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

$$y = -x + 4$$

$$x + y = 4$$

$$y = -x + 4$$

infinitely many  
b/c same slope &  
same y-int.

Homework: pg. 377 #8, 10, 12, 14, 18, 23, 25, 30, 38, 47, 48