

## Chapter 3 Quiz 1

Form G

Lessons 3-1 through 3-3

### Do you know HOW?

Solve each system of equations by graphing. Name the x- and y- intercepts for the equations in standard form.

1. 
$$\begin{cases} y = -2x + 5 \\ x - y = 1 \end{cases}$$

2. 
$$\begin{cases} 2x + y = 10 \\ 3y = 2x + 6 \end{cases}$$

Solve each system of equations by substitution or elimination.

3. 
$$\begin{cases} y = x \\ x - 4y = 0 \end{cases}$$

4. 
$$\begin{cases} 5x + y = 0 \\ -5x + 2y = 30 \end{cases}$$

5. 
$$\begin{cases} 3x - 5y = 11 \\ 4x + 2y = 32 \end{cases}$$

Solve each system of inequalities by graphing.

6. 
$$\begin{cases} 2x - 3y < 9 \\ x + y > -2 \end{cases}$$

7. 
$$\begin{cases} -x - y \geq 1 \\ y \leq -|x - 3| - 1 \end{cases}$$

8. Pump Up Gym has an initial joining fee of \$205 and monthly membership dues of \$15. Universe Gym has an initial joining fee of \$125 and monthly membership dues of \$19.

- When will the costs to join and maintain membership at the gyms be equal?
- If you planned on continuing your gym membership for only 2 years, which gym would you join? Explain.

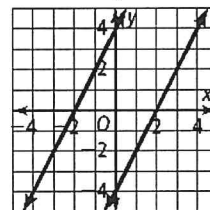
9. **Reasoning** Is it possible for a dependent linear system to consist of two lines with different slopes?

11. Draw a system which is consistent and independent, a system which is consistent and dependent, and a system which is independent.

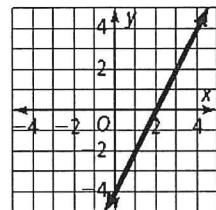
11. **Error Analysis** Your teacher asked the class to graph the system of equations to find the solution. You turned in Graph A and said there were no solutions. Your friend turned in Graph B and said there were infinite solutions. Which of you is correct? What mistake was made?

$$\begin{cases} 3y = 6x - 12 \\ -5y = -10x - 20 \end{cases}$$

Graph A



Graph B



# Chapter 3 Quiz 1

1. ①  $y = -2x + 5$   
slope y-int

②  $x - y = 1$

x-int:  
 $y = 0$

$x - 0 = 1$

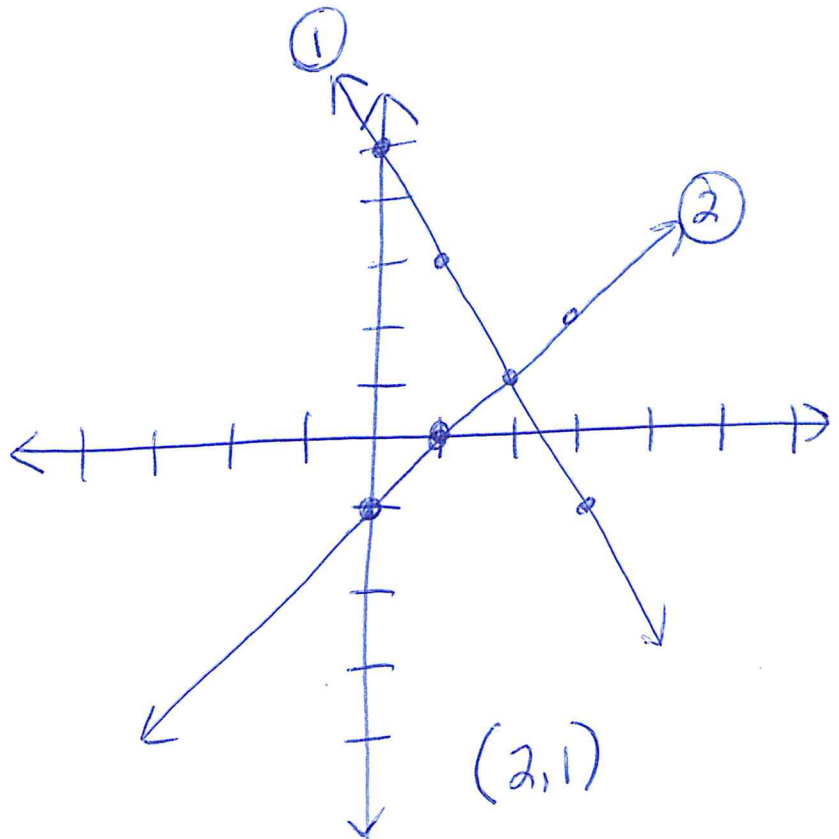
$x = 1$

$m = \frac{-1}{-1} = 1$

OR

$$\begin{array}{r} x - y = 1 \\ -x \quad 0 - x \\ \hline -y = -x + 1 \\ \frac{-y}{-1} = \frac{-x + 1}{-1} \end{array}$$

$y = x - 1$



Check:

$(2, 1)$

$1 = -2(2) + 5$

$1 = -4 + 5$

$1 = 1$

$2 - 1 = 1 \rightarrow 1 = 1$

2. ①  $2x + y = 10$

②  $\frac{3y}{3} = \frac{2x + 6}{3}$

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

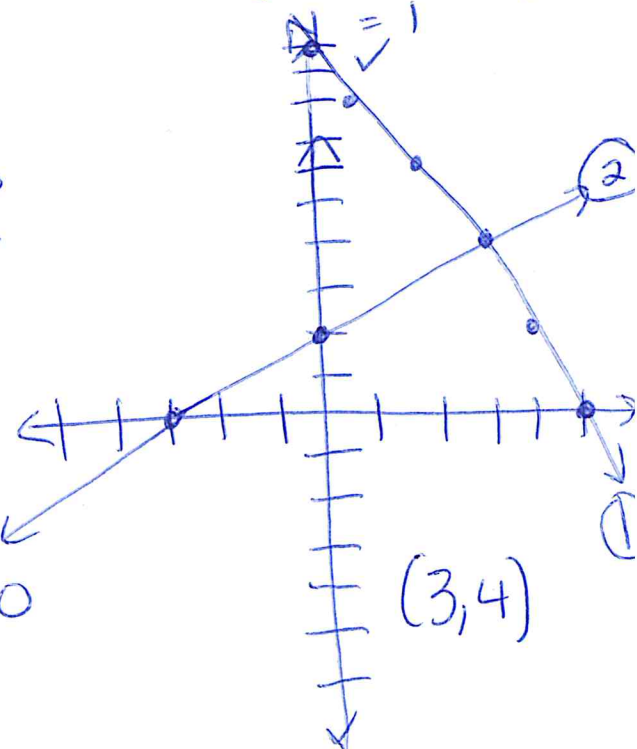
x=0  
 $2 \cdot 0 + y = 10$   
 $y = 10$

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

OR

$$\begin{array}{r} 2x + y = 10 \\ -2x \quad -2x \\ \hline y = -2x + 10 \end{array}$$

$y = -2x + 10$



Check  $2 \cdot 3 + 4 = 10$   
 $6 + 4 = 10$   
 $10 = 10$

$3 \cdot 4 = 2 \cdot 3 + 6$   
 $12 = 6 + 6$   
 $12 = 12$

$$3. \quad y = x$$

$$x - 4y = 0 \rightarrow x - 4x = 0$$

$$\frac{-3x}{-3} = \frac{0}{-3}$$

$$y = x$$

$$y = 0$$

$$\boxed{(0, 0)}$$

Check

$$0 = 0$$

✓

$$0 - 4 \cdot 0 = 0$$

$$0 = 0$$

✓

$$5 \cdot 2(3x - 5y = 11) \rightarrow 6x - 10y = 22$$

$$5(4x + 2y = 32) \rightarrow 20x + 10y = 160$$

$$4(7) + 2y = 32$$

$$\frac{28 + 2y = 32}{-28 \quad -28}$$

$$\frac{2y}{2} = \frac{4}{2}$$

$$y = 2$$

$$\frac{26x}{26} = \frac{182}{26}$$

$$x = 7$$

$$\boxed{(7, 2)}$$

$$3 \cdot 7 - 5 \cdot 2 = 11$$

$$21 - 10 = 11$$

$$11 = 11$$

✓

$$4 \cdot 7 + 2 \cdot 2 = 32$$

$$28 + 4 = 32$$

$$32 = 32$$

✓

$$4. \quad 5x + y = 0$$

$$\frac{-5x + 2y = 30}{\quad \quad \quad}$$

$$\frac{3y}{3} = \frac{30}{3}$$

Elimination

$$y = 10$$

$$\frac{5x + 10 = 0}{-10 \quad -10}$$

$$(-2, 10)$$

$$\frac{5x}{5} = \frac{-10}{5}$$

$$x = -2$$

Check  $5(-2) + 10 = 0$

$$-10 + 10 = 0$$

$$0 = 0$$

$$-5(-2) + 2(10) = 30$$

$$10 + 20 = 30$$

$$30 = 30$$

✓

OR substitution

$$\frac{5x + y = 0}{-5x \quad -5x}$$

$$y = -5x$$

$$y = -5(-2)$$

$$y = 10$$

$$-5x + 2y = 30$$

$$-5x + 2(-5x) = 30$$

$$-5x - 10x = 30$$

$$\frac{-15x}{-15} = \frac{30}{-15}$$

$$x = -2$$

$$(-2, 10)$$

$$6. \quad 2x - 3y < 9 \quad \text{dashed}$$

$$x + y > -2 \quad \text{dashed}$$

$$x=0$$

$$2 \cdot 0 - 3y = 9$$

$$-3y = 9$$

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

$$y = -3$$

$$y=0$$

$$2x - 3 \cdot 0 = 9$$

$$2x = 9$$

$$x = \frac{9}{2}$$

Test (0,0)

$$2 \cdot 0 - 3 \cdot 0 < 9$$

$$0 < 9$$

True

$$x=0$$

$$0 + y = -2$$

$$y = -2$$

$$y=0$$

$$x + 0 = -2$$

$$x = -2$$

Test (0,0)

$$0 + 0 > -2$$

$$0 > -2$$

T

OR

$$\frac{2x - 3y < 9}{-2x} \quad \frac{-2x}{-2x}$$

$$\frac{-3y < -2x + 9}{-3} \quad \frac{-2x}{-3} \quad \frac{9}{-3}$$

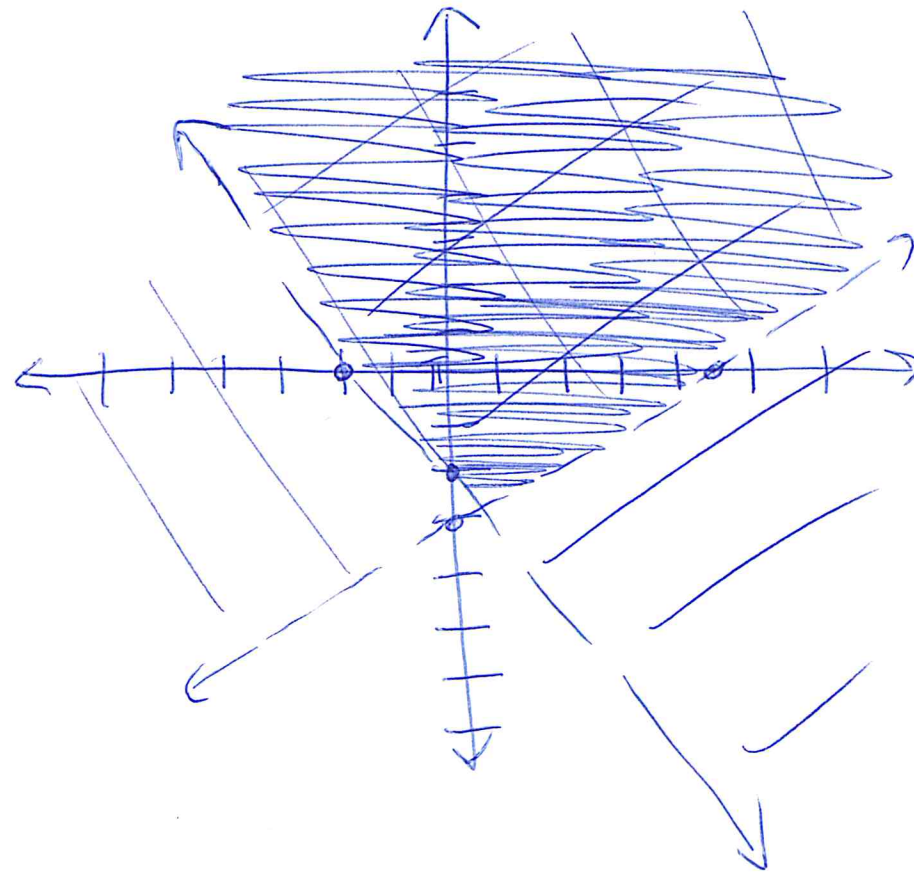
$$y > \frac{2}{3}x - 3$$

shade up y-axis

$$\frac{x + y > -2}{-x} \quad \frac{-x}{-x}$$

$$y > -x - 2$$

shade up y-axis



7. Do not have to do absolute value on quiz.

$$\frac{-x - y \geq 1}{+x} \quad \frac{+x}{+x}$$

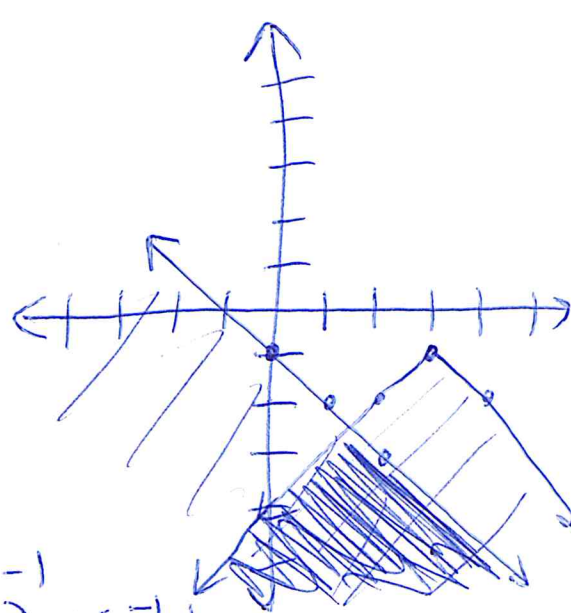
$$\frac{-y \geq x + 1}{-1} \quad \frac{-1}{-1}$$

$$y \leq -x - 1$$

down

$$y \leq \frac{\text{flip}}{\text{down}} |x - 3| - 1$$

down  $v: (3, -1) \quad m = -1, 1$





8. PUG :  $y = \$205 + \$15x$   
 $y = 15x + 205$

UG :  $y = \$125 + \$19x$   
 $y = 19x + 125$

Substitution

$$\begin{array}{r} 15x + 205 = 19x + 125 \\ -15x \quad \quad \quad -15x \\ \hline 205 = 4x + 125 \\ -125 \quad \quad \quad -125 \\ \hline 80 = 4x \\ \frac{80}{4} = \frac{4x}{4} \end{array}$$

a. 20 months

$\leftarrow 20 = x$

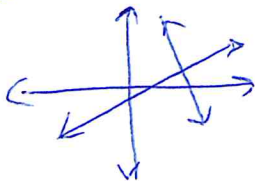
$$\begin{aligned} y &= 15 \cdot 20 + 205 \\ &= 300 + 205 \\ y &= 505 \end{aligned}$$

b. 2 years = 24 months

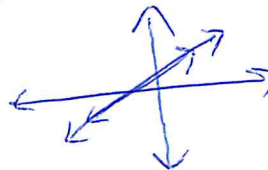
After 20 months, costs are equal, so only additional cost is monthly fee, which is less at Pump Up Gym, so I would join Pump Up Gym.

9. A dependent linear system consists of two coinciding, or same lines, so their slopes would have to be the same. No.

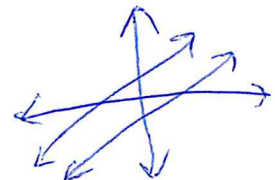
10.(ii) consistent + ind.



consistent + dep.



inconsistent



11.  $\frac{3y}{3} = \frac{6x - 12}{3}$   
 $y = 2x - 4$

$$\begin{aligned} -5y &= -10x - 20 \\ -5 & \quad \quad \quad -5 \\ \hline y &= 2x + 4 \end{aligned}$$

You (Graph A) are correct. The y-ints are 4 and -4, not both -4. Your friend forgot to divide -20 by NEGATIVE 5.