

**Homework 1: Graphing and Substitution****Solve each system by graphing.**Find each solution, if possible, or write "no solution" or "all points on the line  $y = \underline{\hspace{2cm}}$ " if there are infinitely many solutions.

1. 
$$\begin{cases} y = -x + 4 \\ y = -x + 2 \end{cases}$$

No solution  
 $\emptyset$ 

2. 
$$\begin{cases} y = 4x + 3 \\ y = x - 6 \end{cases}$$

 $(-3, -9)$ 

3. 
$$\begin{cases} 3y = 6x - 3 \\ y = 2x - 1 \end{cases}$$

all pts on  
the line

$$\{(x,y) \mid y = 2x - 1\}$$

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

 $(0, 0)$ 

5. 
$$\begin{cases} 2y = 4x \\ y = 2x + 1 \end{cases}$$

No solution  
 $\emptyset$ 

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

all pts on  
line

$$\{(x,y) \mid y = -x + 10\}$$

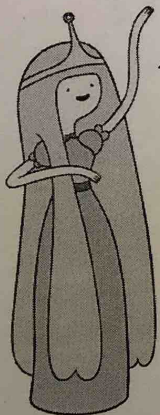
7. 
$$\begin{cases} x + y = 8 \\ x - y = 4 \end{cases}$$

 $(6, 2)$ 

8. 
$$\begin{cases} 4x + 2y = 10 \\ y = -2x \end{cases}$$

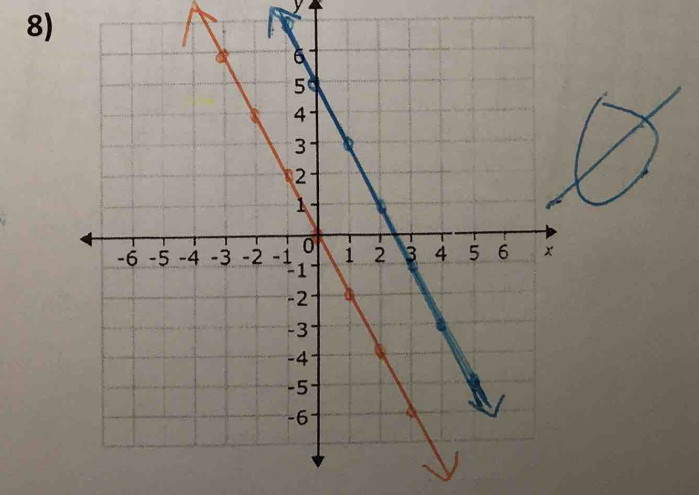
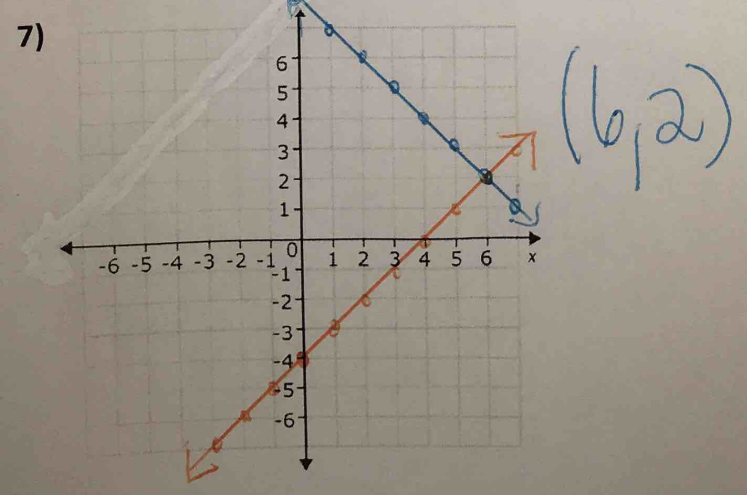
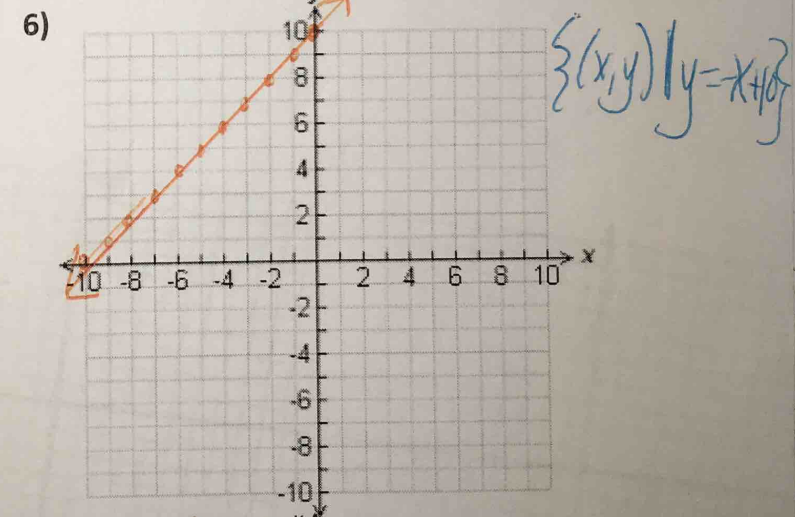
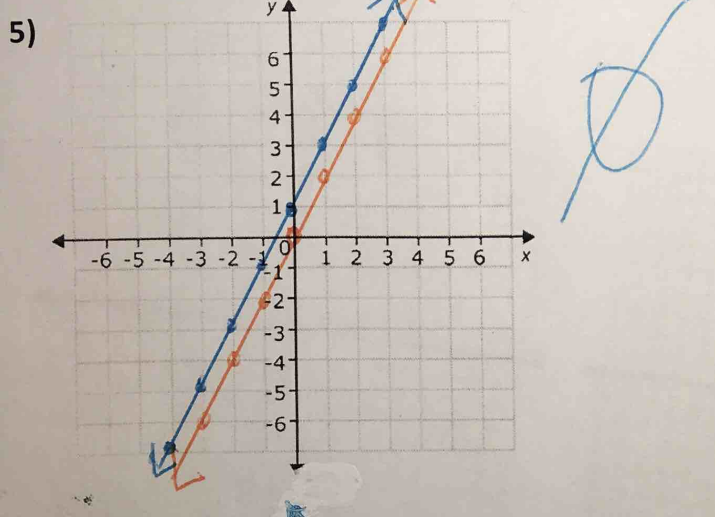
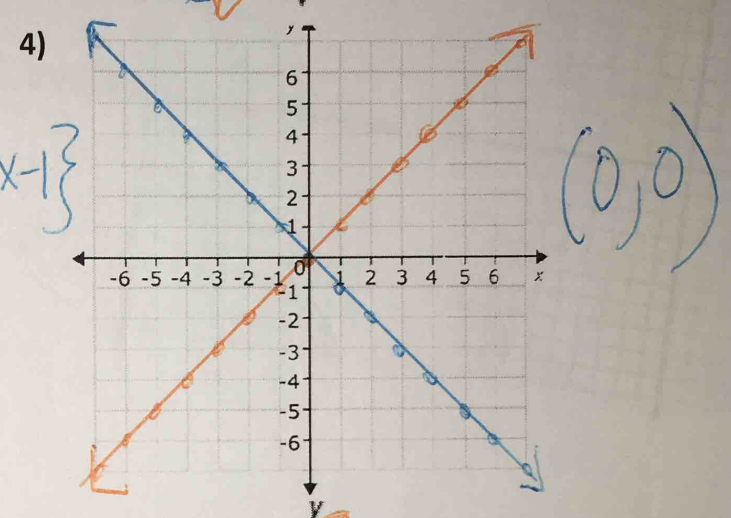
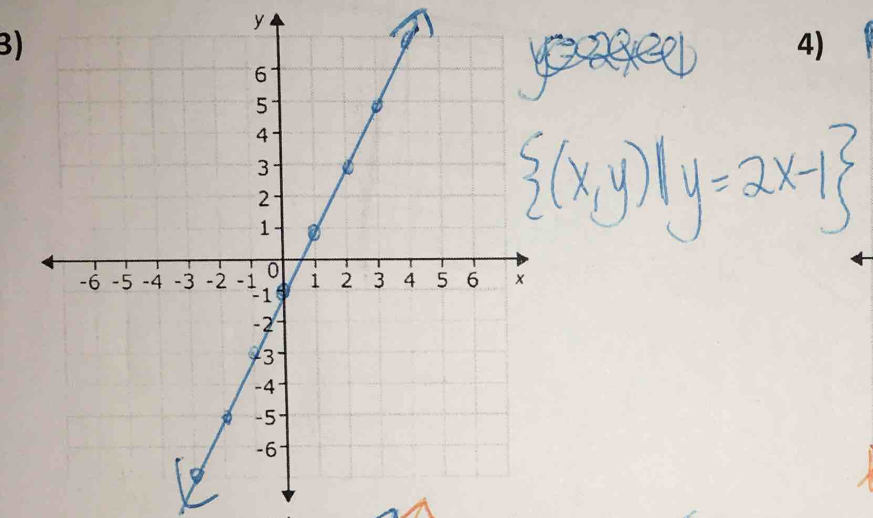
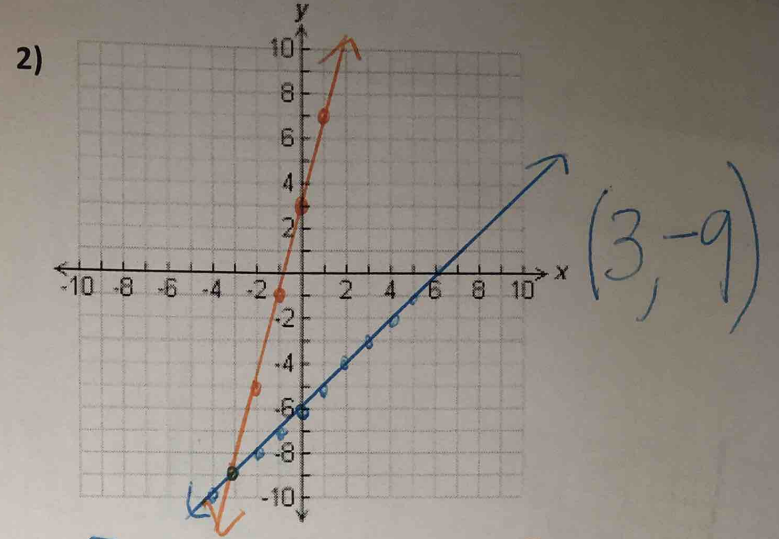
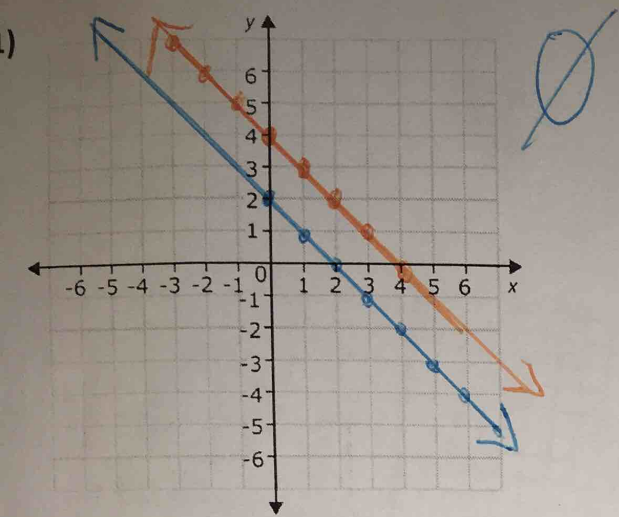
No  
solution  
 $\emptyset$ **CHALLENGE:**

Princess Bubblegum said that a system of equations that contains the equations that have the same slope always has no solution. Do you agree? Explain.



No.

If 2 equations have the same slope  
**AND** the same y-intercept, then it  
will have infinitely many solutions!



# Homework - Substitution Method

Solve each system by substitution.

1.  $\begin{cases} 3x + 4y = 9 \\ y = x - 3 \end{cases}$

$$3x + 4(x - 3) = 9$$

$$3x + 4x - 12 = 9$$

$$7x = 21$$

$$x = 3$$

$$y = 3 - 3$$

$$y = 0$$

$(3, 0)$

2.  $\begin{cases} 8x - 14y = 5 \\ x = 3y \end{cases}$

$$8(3y) - 14y = 5$$

$$24y - 14y = 5$$

$$10y = 5$$

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

$$x = 3\left(\frac{1}{2}\right)$$

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

$\left(\frac{3}{2}, \frac{1}{2}\right)$

3.  $\begin{cases} 12x + 4 = 8y \\ y = x - 7 \end{cases}$

$$12x + 4 = 8$$

$$12x + 4 = 8(x - 7)$$

$$12x + 4 = 8x - 56$$

$$4x = -60$$

$$x = -15$$

$$y = -15 - 7$$

$$y = -22$$

$(-15, -22)$

4.  $\begin{cases} x = -0.25y + 1 \\ 4x + y = 6 \end{cases}$

$$4(-0.25y + 1) + y = 6$$

$$-y + 4 + y = 6$$

$$4 = 6$$

$\emptyset$

5.  $\begin{cases} 2x - y = 1 \\ 4x + 6y = 10 \end{cases}$

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

$$y = 2x - 1$$

$$4x + 6(2x - 1) = 10$$

$$4x + 12x - 6 = 10$$

$$16x = 16$$

$$x = 1$$

$$y = 2(1) - 1$$

$$y = 1$$

$(1, 1)$

6.  $\begin{cases} x - 7y = -10 \\ 3x - 2y = 8 \end{cases}$

$$x = 7y - 10$$

$$3(7y - 10) - 2y = 8$$

$$21y - 30 - 2y = 8$$

$$19y = 38$$

$$y = 2$$

$$x = 7(2) - 10$$

$$x = 4$$

$(4, 2)$

7.  $\begin{cases} 7x - 2y = 5 \\ x - y = 0 \end{cases}$

$$x = y$$

$$7(y) - 2y = 5$$

$$y - 2y = 5$$

$$-y = 5$$

$$y = -5$$

$$x = -5$$

$(-5, -5)$

8.  $\begin{cases} x - 3y = 8 \\ 3y - x = -8 \end{cases}$

$$x = 3y + 8$$

$$3y - (3y + 8) = -8$$

$$3y - 3y - 8 = -8$$

$$-8 = -8$$

all pts.  
on the  
line

$\{(x, y) | x - 3y = 8\}$