PRACTICE PROBLEMS...Solutions!!!

NRF Ch 7 Systems of Equations

ANSWER

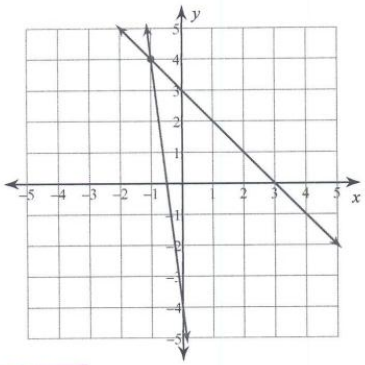
Name _____ ID: 1

Solving by graphing

Date _____ Period ____

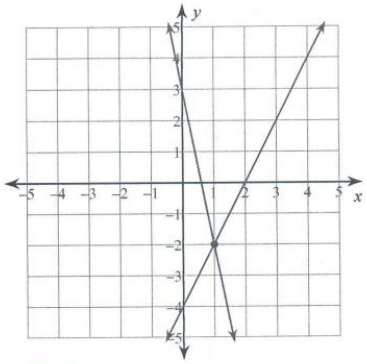
Solve each system by graphing.

1) $y = -8x - 4$
$y = -x + 3$



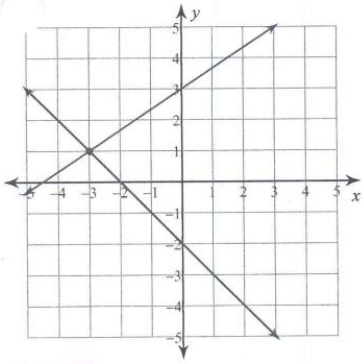
$(-1, 4)$

2) $y = -5x + 3$
$y = 2x - 4$



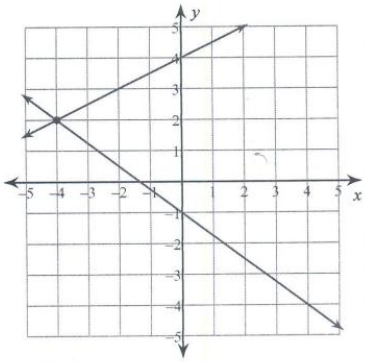
$(1, -2)$

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



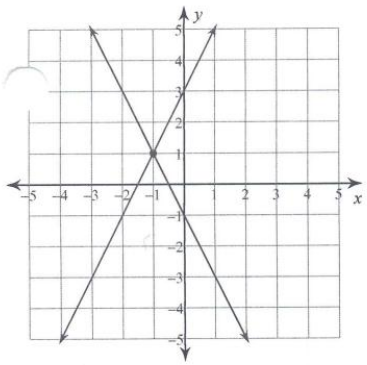
$(-3, 1)$

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



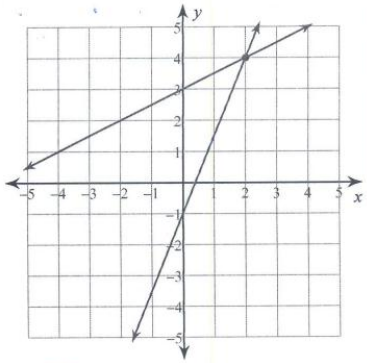
$(-4, 2)$

5) $-3 = -y + 2x$
$2x + y = -1$



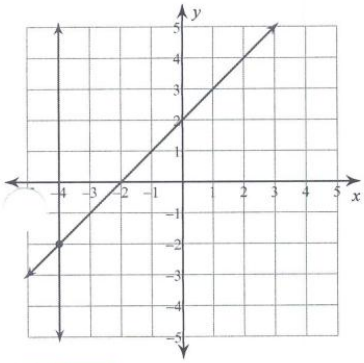
(–1, 1)

6) $6 = 2y - x$
$2y = 5x - 2$



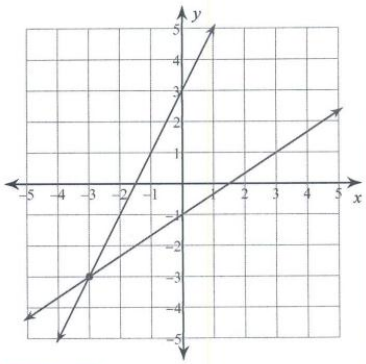
(2, 4)

7) $0 = 8 + 2x$
$2 - y = -x$



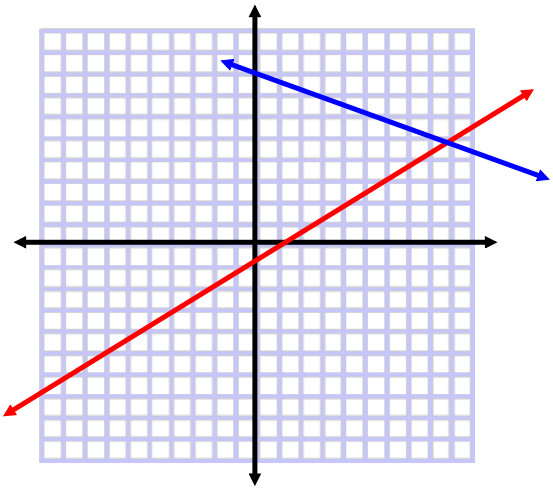
(–4, –2)

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



(–3, –3)

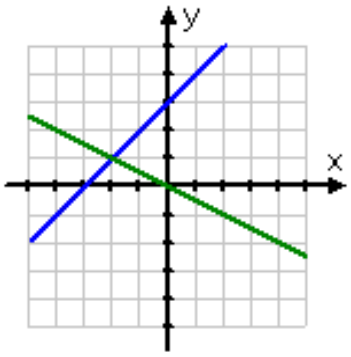
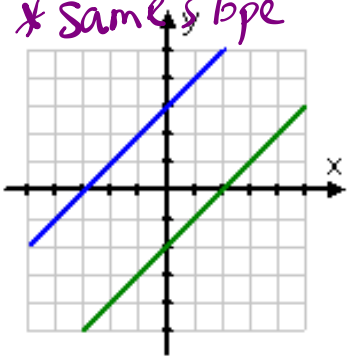
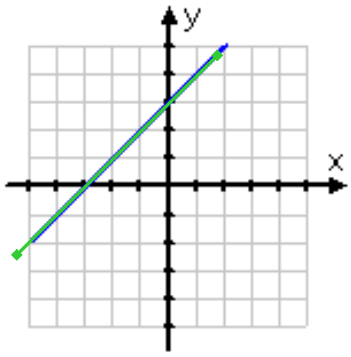
What About This System...Solution???

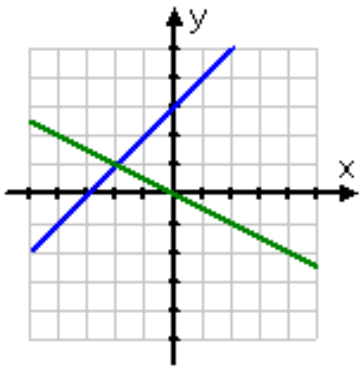
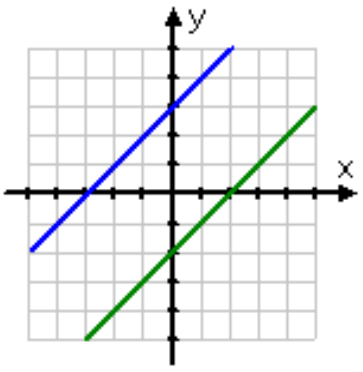
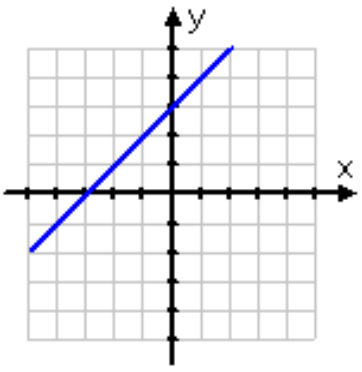


Problems with the method???

When you are solving systems, you are, graphically, finding intersections of lines. For two-variable systems, there are then three possible types of solutions:

Intersection Point Parallel Lines Same Lines

Case 1	Case 2	Case 3
	* same slope 	
1 Solution	NO Solution	Infinite Solutions

Independent system: one solution and one intersection point	Inconsistent system: no solution and no intersection point	Dependent system: the solution is the whole line
		

Solving Systems of Equations Using Substitution

The method of solving "by substitution" works by solving one of the equations (you choose which one) for one of the variables (you choose which one), and then plugging this back into the other equation, "substituting" for the chosen variable and solving for the other. Then you back-solve for the first variable.

EXAMPLE...Substitution Method

- Solve the following system by substitution.

$2x - 3y = -2$

$4x + y = 24$

$y = -4x + 24$

$2x - 3(-4x + 24) = -2$

$2x + 12x - 72 = -2$

$14x = -2 + 72$

$\frac{14x}{14} = \frac{70}{14}$

$x = 5$

$y = -4x + 24$

$y = -4(5) + 24$

$y = -20 + 24$

$y = 4$

$(5, 4)$

STEPS...

1) Rearrange ONE equation to either 'x =' or 'y ='

[FIND THE LONE VARIABLE]

2) SUBSTITUTE this equation into the **other equation**

3) SOLVE this new equation with only 1 variable

4) Back substitute to get the other unknown variable.

EXAMPLE #2: $y = -4x - 18$

$2x + 3y = -24$

$2x+3(-4x-18)=-24$

$2x-12x-54=-24$

$-10x=-24+54$

$\frac{-10x}{-10}=\frac{30}{-10}$

$x=-3 \Rightarrow$ $y=-4x-18$

$y=-4(-3)-18$

$y=-6$

$(-3,-6)$

YOUR TURN...

$$-2x + y = 6$$
$$-8x + 2y = 20$$

$-8x = 20 - 2y$

$x = \frac{20}{-8} - \frac{2y}{-8}$

$-2\left(-\frac{20}{8} + \frac{2y}{8}\right) + y = 6$

$(8)\ \frac{40}{8}(8) - \frac{4y}{8}(8) + y(8) = 6(8)$

$40 - 4y + 8y = 48$

$4y = 48 - 40$

$4y = 8$

$y = 2 \Rightarrow x = -\frac{20}{8} + \frac{2y}{8}$

$x = -\frac{20}{8} + \frac{2(2)}{8}$

$x = -\frac{16}{8}$

$x = -2$

$(-2, 2)$

$y = 2x + 6$

$-8x + 2(2x + 6) = 20$

$-8x + 4x + 12 = 20$

$\frac{-4x}{-4} = \frac{8}{-4}$

$x = -2$

$y = 2(-2) + 6$

$y = 2 \quad (-2, 2)$

PRACTICE PROBLEMS..

~~ALL odd #'s~~ Worksheet - Solve by Substitution.pdf

#2, 4, 7, 8, 10

(4,3) (-4,3) (-3,-6) (3,-4) (0,-3)

Attachments

Worksheet - Solve by Graphing.pdf

Worksheet - Solve by Substitution.pdf