Let's see if we got this...

Solve each system by substitution.

1) $y = -7x + 19$
$4x - 4y = -12$

(2, 5)

$4x - 4(-7x + 19) = -12$
$4x + 28x - 76 = -12$
$32x - 76 = -12$
$32x = 64$
$x = 2$
$y = -7(2) + 19$
$y = 5$

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

$-3x + 3(x - 2) = -1$
$\cancel{-3x + 3x} - 6 = -1$
$-6 = -1$
NO SOL.

3) $y = 4x + 22$
$8x - 2y = -44$

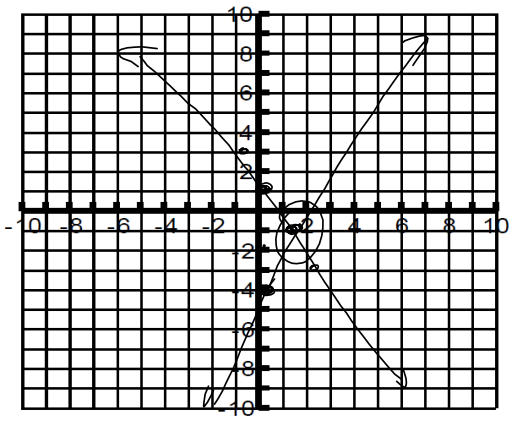
$8x - 2(4x + 22) = -44$
$\cancel{8x - 8x} - 44 = -44$
$-44 = -44$
IMS

4) $y = 7x - 6$
$3x + 4y = 7$

(1, 1)

$3x + 4(7x - 6) = 7$
$3x + 28x - 24 = 7$
$31x = 31$
$x = 1$
$y = 7(1) - 6$
$y = 1$

Ways of Solving a System

Method	When do we use it?	Example:	
Graphing	When we want to find an approximate solution.	$y = -2x + 1$ $m = \frac{-2}{1}, b = 1$ $y = 3x - 4$ $m = \frac{3}{1}, b = -4$ $(1,-1)$ 	
Substitution	When one (or both) equation(s) is solved for one variable.	$y = x + 3$ $2x - 4y = -12$ $2x - 4(x+3) = -12$ $2x - 4x - 12 = -12$ $-2x - 12 = -12$ $-2x = 0$ $x = 0$ $y = 0 + 3$ $y = 3$ $(0,3)$	$y = x + 3$ $y = 2x - 4$ $x + 3 = 2x - 4$ $-2x \quad -2x$ $-x + 3 = -4$ $-x = -7$ $x = 7$ $y = 7 + 3$ $y = 10$ $(7,10)$
Elimination	When both equations are written in standard form.	$-x + 3y = 3$ $4x - 3y = 6$ $3x = 9$ $x = 3$ $-x + 3y = 3$ $-3 + 3y = 3$ $3y = 6$ $y = 2$ $(3, 2)$	$-1.(2x - 3y = -13)$ $2x + 2y = 7$ $-2x + 3y = 13$ $2x + 2y = 7$ $5y = 20$ $y = 4$ $2x + 2y = 7$ $2x + 2(4) = 7$ $2x + 8 = 7$ $-8 \quad -8$ $2x = -1$ $x = \frac{-1}{2}$ $(-\frac{1}{2}, 4)$

Solving Systems by Elimination

Steps
1. Arrange the equations with like terms in columns. 2. Multiply, if necessary, to create opposite coefficients for one variable. 3. Add/Subtract the equations. 4. Substitute the value to solve for the other variable. 5. Write your answer as an ordered pair. 6. Check your answer.

1. $2x - 2y = -8$
$2x + 2y = 4$

$4x = -4$
$x = -1$

$2(-1) - 2y = -8$
$-2 - 2y = -8$
$-2y = -6$
$y = 3$

$(-1, 3)$

2. $4x + 3y = 16$
$2x - 3y = 8$

$6x = 24$
$x = 4$

$4(4) + 3y = 16$
$16 + 3y = 16$
$3y = 0$
$y = 0$

$(4, 0)$

3. $3x + 2y = 7$
$-3x + 4y = 5$

$6y = 12$
$y = 2$

$3x + 2(2) = 7$
$3x + 4 = 7$
$3x = 3$
$x = 1$

$(1, 2)$

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

$4x - 6y = -4$
$-4x + 5y = 2$

$-y = -2$
$y = 2$

$2x - 3(2) = -2$
$2x - 6 = -2$
$2x = 4$
$x = 2$

$(2, 2)$

5. $5x + 2y = 7$
$-2(-4x + y = -16)$

$5x + 2y = 7$
$8x - 2y = 32$

$13x = 39$
$x = 3$

$5(3) + 2y = 7$
$15 + 2y = 7$
$2y = -8$
$y = -4$

$(3, -4)$

6. $3(2x + 3y = 1)$
$2(4x - 2y = 10)$

$6x + 9y = 3$
$8x - 4y = 12$

$5y = 15$
$y = 3$

$2x + 3(3) = 1$
$2x + 9 = 1$
$2x = -8$
$x = -4$

$(-4, 3)$

Solving Systems of Equations using Elimination Name: _____

Solve the system of equations using elimination.

1. $2x + y = 4$
   $x - y = 2$

   $3x = 6$
   $x = 2$
   $2(2) + y = 4$
   $4 + y = 4$
   $y = 0$
   $(2, 0)$

2. $x + 4y = 23$
   $-x + y = 2$

   $5y = 25$
   $y = 5$
   $x + 4(5) = 23$
   $x + 20 = 23$
   $x = 3$
   $(3, 5)$

3. $x - y = 8$
   $x + y = 20$

   $2x = 28$
   $x = 14$
   $14 + y = 20$
   $y = 6$
   $(14, 6)$

4. $3x + y = 16$
   $-3x + 4y = 19$

   $5y = 35$
   $y = 7$
   $3x + 7 = 16$
   $3x = 9$
   $x = 3$
   $(3, 7)$

5. $5x + 2y = 5$
   $-2(3x + y = 2)$

   $5x + 2y = 5$
   $-6x - 2y = -4$
   $-x = 1 \quad x = -1$
   $(-1, 5)$
   $5(-1) + 2y = 5$
   $-5 + 2y = 5$
   $2y = 10$
   $y = 5$

6. $4(3x + 5y = 6)$
   $-12x + 6y = 15$

   $12x + 20y = 24$
   $-12x + 12y = 15$
   $32y = 39$
   $y = 1.5$
   $3x + 5(1.5) = 6$
   $3x + 7.5 = 6$
   $3x = -1.5$
   $x = -.5$
   $(-.5, 1.5)$

7. $-3(2x + 6y = 4)$
   $2(3x - 7y = 6)$

   $-6x - 18y = -12$
   $6x - 14y = 12$
   $32y = 0$
   $y = 0$
   $2x + 6(0) = 4$
   $2x = 4$
   $x = 2$
   $(2, 0)$

8. $4(4x + 5y = -2)$
   $5(5x - 4y = -23)$

   $16x + 20y = -8$
   $25x - 20y = -115$
   $41x = -123$
   $x = -3$
   $4(-3) + 5y = -2$
   $-12 + 5y = -2$
   $5y = 10$
   $y = 2$
   $(-3, 2)$

9. $2(4x - 3y = 11)$
   $3(3x + 2y = -13)$

   $8x - 6y = 22$
   $9x + 6y = -39$
   $17x = -17$
   $x = -1$
   $4(-1) - 3y = 11$
   $-4 - 3y = 11$
   $-3y = 15$
   $y = -5$
   $(-1, -5)$

10. $5(2x - y = 16)$
    $3x + 5y = 11$

    $10x - 5y = 80$
    $3x + 5y = 11$
    $13x = 91$
    $x = 7$
    $2(7) - y = 16$
    $14 - y = 16$
    $-y = 2$
    $y = -2$
    $(7, -2)$

11. $-1(x + 3y = -7)$
    $x - 5y = 9$

    $-x - 3y = 7$
    $x - 5y = 9$
    $-8y = 16$
    $y = -2$
    $x + 3(-2) = -7$
    $x - 6 = -7$
    $x = -1$
    $(-1, -2)$

12. $5(-7x + 8y = 32)$
    $7(5x + 6y = 24)$

    $-35x + 40y = 160$
    $35x + 42y = 168$
    $82y = 328$
    $y = 4$
    $5x + 6(4) = 24$
    $5x + 24 = 24$
    $5x = 0$
    $x = 0$
    $(0, 4)$

Find the error:

13.
$$\begin{array}{r} 3x - 4y = -5 \\ + \quad -3x - 6y = -5 \\ \hline -10y = -10 \\ y = +1 \end{array}$$

$$\frac{-2y}{-2} = \frac{-10}{-2}$$
$y = 5$
$3x - 4(5) = -5$
$3x - 20 = -5$
$+20 \quad +20$
$\frac{3x}{3} = \frac{15}{3}$
$x = 5$
$\boxed{(5, 5)}$

$3x - 4(+1) = -5$
$3x - 4 = -5$
$3x = -1$
$x = \frac{-1}{3}$
$(-\frac{1}{3}, 1)$

Evens or Odds or Choose 9 or

do All :)