How would you solve this system of equations using Substitution?

You need to rewrite one of the equations to that is it either y = or x =

5x + 6y = 23

2x + 4y = 14

$-4y \quad -4y$

$5(7-2y)+6y=23$

$35-10y+6y=23$

$35-4y=23$

$-35 \quad -35$

$\frac{-4y}{-4}=\frac{-12}{-4}$

$y=3$

Now find x.

$2x=14-4y$

$\frac{2x}{2}=\frac{14-4y}{2}$

$x=7-2y$

$x=7-2(3)=7-6$

$x=1$

(1, 3)

It's looks easiest to solve for x in the second equation then substitute this into the first equation.

Solve this system of equations using Substitution:

3x - y = -2

6x - 2y = -4

You could solve this equation for y and substitute into the first equation.

$y=\frac{-4-6x}{-2}$

$y=2+3x$

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

$3x-2-3x=-2$

$-2=-2$

this result indicate that the system of equations has MANY SOLUTIONS.

You can now finish Hwk #3 Sec 7-2

Pages 350-351

Problems 9, 10, 13, 18, 22, 24, 39, 41-43

Due Thursday

Would this system of equations be easy to solve using substitution?

2x + 5y = 3

3x - 5y = 17

No. Regardless of which equation or which variable to try to solve for you would introduce fractions into the problem. This will still lead to the same solution but it may make it more difficult to solve.

Sec 7-3: Solving systems of equations using ELIMINATION

Solving by elimination may involve:

- Just adding or subtracting the two equations
- Multiplying one of the equations by a constant then adding or subtracting.
- Multiplying both equations by a constant then adding or subtracting.

Solve this system of equations using ELIMINATION

$2x + 5y = 3$
$3x - 5y = 17$

$2x + 5y = 3$
$3x - 5y = 17$ or $+\ 2x + 5y = 3$, $+\ 3x - 5y = 17$

$5x = 20$

$x = 4$

Since the y's are already opposites you only need to add the equations together to eliminate y.

Now find y.

$2(4) + 5y = 3$
$8 + 5y = 3$
$-8 \quad -8$
$5y = -5$

$(4, -1)$

Solve this system of equations using Elmination.

$3E - 2F = 1$
$7E - 2F = -3$

$3E - 2F = 1$
$7E - 2F = -3$ or $3E - 2F = 1$, $-\ 7E - 2F = -3$

$-4E = 4$

$\frac{-4E}{-4} = \frac{4}{-4}$

$E = -1$

Since the F terms are already the same you only have to subtract the equations to eliminate F.

Now find F.

$3(-1) - 2F = 1$
$-3 - 2F = 1$
$+3 \quad +3$
$-2F = 4$
$\frac{-2F}{-2} = \frac{4}{-2}$
$F = -2$

$(-1, -2)$

Solve this system of equations using Elmination.

$6c + 5d = 9$
$4c - d = -7$

$6c + 5d = 9$
$4c - d = -7$ or $6c + 5d = 9$, $5(4c - d = -7)$ $\rightarrow +\ 20c - 5d = -35$

$26c = -26$

$\frac{26c}{26} = \frac{-26}{26}$

$c = -1$

because the d's already have opposite signs and you only have to multiply the second equation by 5, eliminating d looks easier.

Now find d.

$6(-1) + 5d = 9$
$-6 + 5d = 9$
$+6 \quad +6$
$5d = 15$
$\frac{5d}{5} = \frac{15}{5}$
$d = 3$

$(-1, 3)$

Solve this system of equations using Elmination.

Since you would only have to multiply the 2nd equation by a constant it will be easier to eliminate the a's.

9a + 8b = 4
3a + 5b = -8

3

9a + 8b = 4
3a + 5b = -8

or

9a + 8b = 4
3a + 5b = -8

$(4, -4)$

$9a + 8b = 4$
$-(9a + 15b = -24)$

$-7b = 28$
$-7 \quad -7$
$b = -4$

now find a.

$9a + 8(-4) = 4$
$9a + -32 = 4$
$+32 \quad +32$
$9a = 36$
$a = 4$

Solve this system of equations using Elmination.

Since the n's already have opposite signs you will be able to ADD once you've made the coefficients the same number part

7m +2n = 47
2m - 3n = -8

2 (7m +2n = 47)
7 (2m - 3n = -8)

or

(7m +2n = 47) 3
(2m - 3n = -8) 2

Now find n.

$7(5) + 2n = 47$
$-35 \quad -35$
$2n = 12$
$n = 6$

$21m + 6n = 141$
$+ \quad 4m - 6n = -16$
$25m = 125$
$m = 5$

$(5, 6)$