Week 15 Algebra 1 Assignment:

Day 1: pp. 286-287 #1-15 odd, 22-27
Day 2: pp. 292-293 #2-18 even, 21-24
Day 3: pp. 298-299 #1-17 odd, 21-25
Day 4: pp. 307-309 #11-19 odd, omit #15, 26-29 (use calculators)

Notes on Assignment:

Pages 286-287:

Work to show:

#1-15: To solve a system by substitution, do the following:

1. Solve one equation for one of the variables. (Choose the easiest one.)
2. Substitute into the other equation.
3. Solve that equation.
4. Back-substitute your solution into one of the equations to solve for the other variable.
5. Check your solution.

#22-27: Graphs

Notes on this section: When you are solving a system by substitution, and you end up with something that is *always* true (example: "4=4") then you have infinitely many solutions (the equations are the same line). If you end up with something that is *never* true (example: "7=9") then you have no solution (the lines are parallel).

*If you need a reminder of how to label systems as independent/dependent and inconsistent/consistent, refer back to last week's assignment notes.

#1: You may want to clear the 2^{nd} equation of its ( ) before doing your substitution.

#7: Definitely clear the ( ) in the 1^{st} equation first. Even with doing this, your substituting equation is going to have a fraction in it.

#11: Your answer will be fractions.

#13: This equation is a little different but must be done the same way. The first equation is solved for y^2 so where you see a y^2 in the 2^{nd} equation, substitute $(x+9)$. Your equation before and after substituting looks like this:

$$4x + y^2 = 209$$
$$4x + (x+9) = 209$$

After you solve for x, and put that back in to solve for y, be careful because you are going to get 2 possible solutions for y (one positive and one negative).

Pages 292-293:

Work to show:

#2-18: To solve these systems by addition, you must

1. Multiply one of the equations by -1 if necessary so that either the x-terms or the y-terms are opposites.
2. Add the equations together, resulting in one variable dropping out.
3. Back-substitute to find the value of the other variable.
4. Check.

#21-24: Clear any (   ) and negative exponents and then simplify.

#1: Before adding these equations together, multiply the bottom equation all of the way through (both sides) by -1. Then your system will look like:

$$\begin{cases} 7x + y = 35 \\ -x - y = -5 \end{cases}$$

Now add the equations together and the y's will drop out.

#8: Since you know what x equals, you just need to back-substitute to find y.

#10: Add these equations together as they are and your y's will drop out.

#12-18: These answers may have fractions, may be the same line, or may be parallel lines. When you are solving a system by the addition method, and you end up with something that is *always* true (example: "4=4") then you have infinitely many solutions (the equations are the same line). If you end up with something that is *never* true (example: "7=9") then you have no solution (the lines are parallel).

#25: Take care of the (   ) first.

Pages 298-299:

Work to show:

#1-17: To solve a system by addition, you must

1. Multiply one (or both) of the equations by an integer(s) so that either the x-terms or the y-terms are opposites.
2. Add the equations together, resulting in one variable dropping out.
3. Back-substitute to find the value of the other variable.
4. Check.

#21-22: These are 5-step word problems.

#1: Multiply the top equation by 3 and the 2nd equation by 2 so that the y-terms are opposites.

$$\begin{matrix}(3)\\(2)\end{matrix}\begin{cases}3x+2y=18\\5x-3y=11\end{cases}$$

$$\begin{cases}9x+6y=54\\10x-6y=22\end{cases}$$

$$19x=76$$

$$x=4$$

Back-substitute into one of the original equations:

$$3x+2y=18$$

$$3(4)+2y=18$$

$$12+2y-12=18-12$$

$$2y=6$$

$$y=3$$

#11: Hint: Multiply the top equation by -2 to clear the fraction *and* to get the x-terms to be opposites.

#13-15: These will be fractions.

#21-22: These are 5-step word problems.

Pages 307-309:

Work to show:

#11-19: These are 5-step word problems. You can use calculators for these.
#26-29: Answers only.

Notes for this section: These are all bucket word problems to be done with 2 variables. For each one, you will put x in the bottom of one and y in the bottom of the other to represent your amounts. One of your equations will have to do with how your amounts x and y are related, and the other will result from your bucket equation. If the total interest amount is given, put that in the last bucket and do not put any other amounts in the bucket. Sometimes it is tempting to put the total invested in the bottom of the last bucket, but don't do that if you already are given the total interest amount. Remember that each bucket represents interest, so if it is already calculated for you, that's all that goes in the bucket.

*You can use a calculator on this assignment.

#11: In the bottom of your buckets put x and y. In the top put 8% and 11%. Since your total annual interest is $1330, put that in your last bucket. Now, since you have 2 variables, you will need 2 equations. The first comes from how x and y are related. They must add up to $15,000, so our first equation is $x + y = 15{,}000$. For the 2nd equation, multiply the buckets to get $.08x + .10y = 1330$. Solve the system.

#13: This problem is set up just like #11 was.

#15: This problem actually has 2 bucket equations. Set them up separately. You will get an equation from each bucket equation.

#17: This problem is set up just like #11 was.

#19: Here you are not given the total amount invested, but are told that the amount in one account is $700 more than in the other. This is what you use for your first equation.

#26: Write this as a double inequality.