Week 18 Pre-Calc Assignment:

Day 1: Chapter 6 test
Day 2: pp. 483-486 #1, 5-27 odd
Day 3: pp. 483-486 #29-49 odd, 63, 67, 71, 75a-c, 89, 95, 97
Day 4: pp. 495-498 #11-33 odd
Day 5: pp. 495-498 #35-53 odd, 63, 71-77 odd, 81-85 odd

Notes on Assignment:

Chapter 6 test:

Items on the test:

- Use the Law of Sines and the Law of Cosines to solve triangles.
- Find the area of a triangle given an angle and the included sides.
- Find the area of a triangle using Heron's Formula.
- Determine the number of solutions to a triangle, given SSA.
- Solve a word problem involving bearings.
- Find the component form of vectors given:
    - The initial point and terminal point
    - The magnitude and angle
    - The linear combination of ***i*** and ***j***
- Find the magnitude of a vector.
- Find the unit vector in the direction of a given vector.
- Add vectors and use scalar multiplication on vectors.
- Find the direction angle of a vector.
- Find the dot product of vectors.
- Find the angle formed by 2 vectors.
- Determine whether 2 angles are orthogonal.

Pages 483-486:

#1: Test each ordered pair in the system equations.

#13: Substitute for y.

#19: Multiply through both equations by 10 to clear the decimals before solving the system.

#21-23: Clear the equations of fractions before solving the system.

#29-49: Do all of these problems on your calculator. All equations must be solved for y before you can enter them using [y=]. Use the [CALC] [intersect] feature to find the points of intersection.

#63: Let R=C to get your system, and then solve the system. After you have solved for x, put that into the R=9950x equation to find the revenue for selling that many units.

#65: Use the same method as for #63.

#67a: Set up you Cost and Revenue equations. If you need help with this, refer to the example on page 481 or the overhead example from class. Then use the same method as you did for #63.

#67b: Use P = R – C for this part. Substitute in R and C from your original system and $60,000 for the desired profit, P. Solve.

#71: Set up 2 equations for earnings. Call the straight commission job E1 and the other E2. Then find out where E1 = E2 by setting E1 = E2 and solving. This is where the 2 jobs would be equal in pay. To make the straight commission job the better offer, you would have to sell more than that amount per week.

#75: Enter the data into L1 and L2 ([STAT] [edit]). Then do a stat plot ([2nd] [STATPLOT]. Use [ZOOM] [ZoomStat] to get your window set correctly. The problem does not ask you to do a stat plot, but if you do, your window will be set correctly for graphing the regression models in part b).

#75a: You are to use your lists L1 and L2 to find 2 model equations. One is a linear regression and the other is a quadratic regression. Use [STAT] [CALC] to get to the regression equations. After you choose LinReg, enter L1, L2, Y1 before pressing [ENTER]. This will enter the equation directly into the [Y=] screen for you. (Remember to use [VARS] [Y-VARS] [function] [Y1] to put it into Y1.) Repeat the process for the quadratic regression, but put it into Y2 instead of Y1.

#75b: Press [GRAPH] to see the graphs of both models.

#75c: You may now want to turn the stat plot off so you can see the 2 regression models clearly. Now use the [2nd] [CALC] [intersect] feature to find the points of intersection.

#89: Find the slope first using m = $\frac{\Delta y}{\Delta x}$. Then using that slope and one of the points, put them in the slope-intercept equation y = mx + b and solve for b. Substitute your values for m and b back into the equation and you are done.

#95-97: The domain is all real numbers except what will make the denominator = 0. The values that make the denominator = 0 are where your vertical asymptotes are. For the horizontal asymptotes, you need to look at the leading terms of the numerator and denominator. Refer to page 167.

Pages 495-498:

#11-29: If you find that the lines are the same, it is sufficient to write "same line - infinitely many solutions." (The solutions manual will have more than this, but it is not required.)

#19: Multiply the first equation by 10 to clear the decimals first.

#21: Multiply the first equation by the LCM of 4 and 6 (i.e. 12) to clear the fractions.

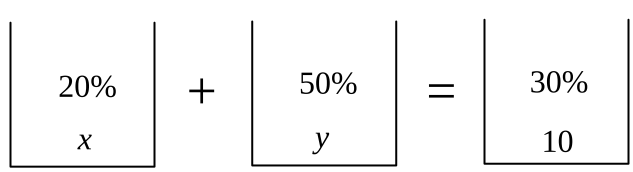
#23-29: Multiply through equations to clear them of decimals or fractions before solving.

#31-33: If, in the course of solving the system, you get something that is never true, then there is no solution and the lines are parallel. If you get something that is always true, then the lines are the same and have infinitely many solutions.

#43-45: The equilibrium point of supply and demand equations is the point where the supply and demand lines intersect. This type of a system helps the manufacturers figure out how many units to produce and what to charge for each unit so that they get their highest profit, without having leftover units that are not purchased. For these problems, you are given the supply equation and the demand equation. Your job is to see where these 2 lines would cross if you graphed them. In other words, solve the system. The solution will be the point (x, p).

#47: Let r = the rate of the plane in still air, and Let w = the windspeed. Going against the wind, the rate of the plane will be r-w. Going with the wind, the rate of the plane will be r+w. Make a chart like the one from the overhead example and fill in what you know. (Hint: 3 hours and 36 minutes is 3.6 hours.) Get your 2 equations from the table and make your system.

#49: Mixture/concentration problems are best done with buckets. Your picture will look like this:



#49a: For your system, one equation will have to do with how much “stuff” you have, which you can see by what is in the bottom of the buckets. For the other equation, you just multiply what’s in the buckets. This represents the acidic concentration. (Don’t forget to write the % as a decimal.)

#49b: To graph these on your calculator, you will have to solve each equation for y. (Hint: set your window as follows: $-6 < x < 18$ and $-4 < y < 12$).

#49c: In other words, solve the system.

#51: This problem is almost identical to the overhead problem from the lesson. Refer to that problem and use buckets.

#53: This is what we call a number/value problem. One equation will have to do with the number of tickets and one will have to do with the value of the tickets. Let x = # of student tickets sold. Let y = # of adult tickets sold. What do x and y add up to? That’s the first equation. Then take $1.50 times the number of student tickets sold and add that to $5.00 times the number of adult tickets sold. What should that add up to? That’s your 2nd equation. Solve the system.

#71-77: If you need a refresher on inequalities, see section A6 in the appendix of your textbook.

#71-73: Remember that these are solved just as regular equations, but if you mult. or divide by a negative number you must flip the inequality.

#75: Less than goes to “and”. Turn this into an “and” statement.

#75: Factor these to find the values for which it equals zero. These are the critical points. Then see what happens in the intervals formed by the critical points.

#81-83: Refer to the properties of logarithms on page 220 for these.