<u>Week 19 Pre-Calc Assignment:</u>

Day 1: pp. 507-511 #1-31 odd
Day 2: pp. 507-511 #33-47 odd, 51, 53, 61, 85-97 odd
Day 3: pp. 519-522 #1-29 odd, 33-37 odd
Day 4: pp. 519-522 #39-53 odd, 57, 81-85 odd, 91-95 odd
Day 5: pp. 534-536 #1-17 odd, 23-27 odd, 31-39 odd, 53-59 odd

<u>Notes on Assignment:</u>

<u>Pages 507-511</u>:

#1-3: See if the ordered triple works in all 3 equations. If it does, then the ordered triple is a solution.

#13-35: Remember that you can 1) exchange 2 rows, 2) multiply through a row by any non-zero number, and 3) add multiples of 2 rows together, replacing one of the 2 rows with the sum equation. The goal is to get row-echelon form and then substitute. Technically, the coefficients on the leading terms are supposed to be 1 to be in row-echelon form, but it is not necessary to solve the system.

#37: This system only has 2 equations, so the 2nd equation will have a y-term and a z-term when you have reduced the system. At this point, solve the 2nd equation for y, and then put your result into the first equation and solve for x. You will get an ordered triple in terms of z. <u>Note</u>: This will be a messy process involving fractions. To avoid this, the solutions manual does something a little tricky. You can follow what the solutions manual does, or just deal with the fractions.

#39-41: All 3 points must work in the equation $y = ax^2 + bx + c$. Putting each point into this equation, you will get a system of 3 equations in terms of a, b, and c. Solve the system for a, b, and c and put them back into $y = ax^2 + bx + c$. You do not have to use your graphing calculator to verify, but if you do, you must do a STATPLOT of the 3 points and then graph the parabola on top of it.

#43-45: All 3 points must work in the equation $x^2 + y^2 + Dx + Ey + F = 0$. Putting each point into this equation, you will get a system of 3 equations in terms of D, E, and F. Solve the system for D, E, and F and put them back into $x^2 + y^2 + Dx + Ey + F = 0$. You do not have to use your graphing calculator to verify.

#47: Substituting the 3 sets of t and s values, you will get a system of 3 equations in terms of a, v_0, and s_0. Solve the system for a, v_0, and s_0 and put these values back into the position equation.

#51: This is similar to the basketball problem that we did in class. You have 3 variables, so you need 3 equations in your system.

#53: This is similar to the investment problem that we did in class. Use buckets.

#85-88: Translate these problems as you read them, and then solve the equation.

#89-93: Remember that $i^2 = -1$.

#93: Use conjugates to rationalize the denominator.

#95-97: To find the zeros, you must factor the polynomial, as the zeros are the numbers that make the polynomial zero. For sketching the graph, remember that since the highest power is 3, there are at most 2 "humps." For #97 you will have to either use long division or synthetic division (see page 137). Remember that the possible rational zeros are going to be a factor of 36 over a factor of 2 (see page 151). (Also refer to the Leading coefficient test on p. 123 and the examples on pp. 126-127.)

Pages 519-522:

#1-11: Remember that there are 2 steps to graphing inequalities. 1) Change the inequality to an = and graph the boundary (dotted or solid). 2) Test a point to see where to shade.

#11: For the boundary, find the x-intercept (by letting y = 0) and then find the y-intercept (by letting x = 0). They may or may not exist. Then check for vertical asymptotes (where does the denominator = 0?). Then ask what happens as x gets huge. Is there a horizontal asymptote? After that you may have to find a few points.

#13-23: You must solve for y before you can enter these on the calculator. Be careful that you have the correct inequality sign. For greater than, shade above the curve. For less than, shade below the curve.

#29: If a point is a solution, it will make all 3 inequalities true.

#33-45: It will be helpful on these problems to use different colored pens/pencils/highlighters, etc. to see where the overlap is. After graphing, find the vertices. To find these, make a system of the 2 equations that meet at a vertex and solve the system (by any method) to find the coordinates of the point.

#37: This only has 2 vertices. The 1st and 3rd equations cross at the point (0, 3) but that point is not a vertex of the solution region.

#47-51: The solutions manual shows only the solution region.

#53: Use the y-intercept and slope to find the equation of the slanted line. The vertical and horizontal lines should be easy.

#57: On of your inequalities is a circle, one is a horizontal line, and one is a vertical line.

#85: Find the slope using $\frac{\Delta y}{\Delta x}$. Then put the slope and one of the points into the equation y = mx + b and solve for b. Then rewrite y = mx + b inserting the slope (m) and the y-intercept (b).

#91: By this time you should be able to do this Data Analysis without promptings. If you get stuck, refer back to some past assignment notes.

#93-95: Solve these with your calculator.

Pages 534-537:

#5-7: Graph these on your calculator.

#9: Use the [intersect] function to find the solution once you have graphed both equations.

#11: Refer to the Break-Even Analysis example on page 481 if you don't remember how to do this.

#13: Your system will include one equation using the perimeter and one that compares the length and width.

#15-17: Clear any fractions, decimals, or parentheses before solving the system.

#23-25: You will need to put these in slope-intercept form first.

#27: Equilibrium happens when the demand equals the supply.

#31-35: If the system is non-square, or if there are infinitely many solutions (i.e. if you get 0=0), then let z = a and back-substitute to find the general ordered triple.

#37: All 3 points must work in the equation $y = ax^2 + bx + c$. Putting each point into this equation, you will get a system of 3 equations in terms of a, b, and c. Solve the system for a, b, and c and put them back into $y = ax^2 + bx + c$. You do not have to use your graphing calculator to verify, but if you do, you must do a STATPLOT of the 3 points and then graph the parabola on top of it.

#39: All 3 points must work in the equation $x^2 + y^2 + Dx + Ey + F = 0$. Putting each point into this equation, you will get a system of 3 equations in terms of D, E, and F.

Solve the system for D, E, and F and put them back into $x^2 + y^2 + Dx + Ey + F = 0$. You do not have to use your graphing calculator to verify.

#53-59: You do not have to find the vertices for #55 or #59. You do need to find the vertices for #53 and #57.