Week 26 Pre-Calc Assignment:

Day 1: pp. 712-715 #5-51 odd
Day 2: pp. 712-715 #59-69 odd, 75-89 odd
Day 3: pp. 722-724 #1-33 odd
Day 4: pp. 722-724 #35-51 odd, 55, 57, 63-73 odd

Notes on Assignment:

Pages 712-715:

#11-23: If the equation is not in standard form, get it that way first. You will need to complete the square on #21 and 23.

#25-27: You will have to put the equation in standard form in order to find the vertex, focus, and directrix, but you must solve the equation for y in order to enter it into your graphing calculator.

#27: Because of the y^2, you will have to take the square root of both sides of the equation when you are solving for y, remembering your +/- sign. That means you actually get 2 separate equations. Graph one as y1 and the other as y2.

#29: Solve each equation for y and graph both. Use the intersect feature of the CALC menu to find the point of tangency. (The TRACE feature will not be accurate enough.) Round the coordinates to the nearest whole number.

#31-41: Sketch your information given first. Use the standard equation that will fit your information. Watch out for whether p is positive or negative so you know which way the parabola opens.

#43: You are given the zeros of the equation. That means the equation when factored looks like y = (x-2)(x-4). Also, since it opens downward, you know that there must be a negative in front. Thus, you have y = -1(x-2)(x-4). Multiply this out and then put it in standard form.

#45: Enter your given point (x,y) and your vertex (h,k) into the standard form of the correct equation, and then solve for p. Put that value of p along with your vertex back in the standard equation.

#47-51: Sketch your information given first. Use the standard equation that will fit your information. Watch out for whether p is positive or negative so you know which way the parabola opens.

#59: Graph the equation and use the max feature in the CALC menu. We want the number of sales that give us a maximum revenue. The number of sales is the x value.

#61: The cross section is vertical. If you slice the dish from top to bottom you get a parabola. That is what you are to find the equation of. (Note: All satellite dishes are parabolic dishes! So are the headlights on your car!)

#63a): This is a parabola that opens downward with vertex at the origin. The point (0,0) would be right between the yellow stripes. Find the coordinates of the points on the edge of the road. You know how far down those points are and you know how far to the right and left of the origin they are. Now take you general equation $x^2=4py$ and put one of the points in to solve for p. Remember that p should be negative since the parabola opens downward.

#63b): In other words, what is the value of x when the value of y = -0.1?

#65b): You are told that the focus is at the center of the earth, so you can find p. Since the parabola opens downward, p will be negative. You can figure out the vertex from the picture. Put those values into the correct standard form of the parabola equation and simplify.

#67: By the equation you can tell that the vertex is (0,s). The value of s is the height where the projectile is fired from. If I were throwing a ball, the value of s would be about 5.5 feet because that is my height, and the approx. height of the ball when it leaves my hand. If I threw underhand, the value of x would be about 4 feet. For this problem, the use 75 feet for the value of s. (They are not taking into account the thrower's height.)

#67b): Hitting the ground would occur when y = 0.

#75-77: You may have to look up the rational zero test if you don't remember it. It has to do with the ratio of the factors of the leading coefficient and the constant.

#79: If you know the zeros, you know the factors that they came from. Write the factors and multiply. This is similar to #43.

#81: Use the rational zero test and then synthetic division to find the first zero. Use the resultant equation from the synthetic division and repeat the process to find the 2^{nd} zero. When you have found 2 of the zeros you will be able to use the quadratic formula (or factoring) to find the other 2.

#83-89: Use the Law of Sines or Law of Cosines.

Pages 722-724:

#11-21: Estimate radicals for the graphing.

#15-21: Complete the square. Follow the examples done in class or example 2 on p. 718.

#29-33: Sketch your given information first.

#47: Find a using the vertices, and then put that value in the eccentricity formula to find c. Then use the $c^2=a^2-b^2$ to find b.

#49b): After drawing the graph in part a) you should be able to get the equation from it. Remember that it is centered at the origin.

#49c): Five feet from the edge of the tunnel will occur when x = +/- 35. Put those into your equation and solve for y.

#51: No hints for this. See if you can figure it out. (o:

#55: First read #54 so you know what the latera recta are. Then using your equation, find and graph the ellipse and its foci. The latera recta points will be straight across from the foci, so the y-coordinates of these points will be the same as the y-coordinates of the foci. Using the length of the latus rectum, find the coordinates of the endpoints of the latus rectum. Remember that you need to go half the distance to the right of the foci and half the distance to the left of the foci for these points.

#57: Follow the same process as for #55.

#71: You can either calculate these directly or use the sum(seq(__,__,__,__)) feature of your graphing calculator. (See class notes for details.)