Week 8 Pre-Calc Assignment:

Day 1: Chapter 2 test
Day 2: pp. 206-208 #1-15 odd, 23, 29, 31, 35-43 odd, 47, 51-57 odd
Day 3: pp. 216-18 #1-37 odd
Day 4: pp. 216-18 #39-57 odd, 59a, 59b, 61-67 odd, 71-77 odd

Notes on Assignment:

Chapter 2 Test:

Things to know for the test:

- Rigid transformations: Left-right and up-down shifts, reflections over the x-axis
- Parabolas: Know the standard form $y = a(x-h)^2 + k$. (vertex is (h,k)) and how to find the equation of a parabola when given the vertex and one other point.
- Describe attributes of a polynomial function:
  - Left and right-hand behavior of the graph.
  - Possible number of zeros (equal to the degree of the polynomial)
  - Possible number of bends or turns (one less than the degree of the polynomial)
- Long division and synthetic division for polynomials
- Finding zeros:
  - Using the Rational Zeros test to make a list of possible zeros (factors of constant term over factors of leading coefficient)
  - Using Descarte's Rule of sign to describe the possible real zeros
  - Using synthetic division to find zeros (look for remainder of 0). After finding a zero, use the quotient polynomial to find the next zero, etc.
- Complex numbers: Simplify, add subtract, multiply, and divide (i.e. rationalize denominators)
- Finding domains of rational functions (watch the denominators to see where they = 0).
- Finding asymptotes for rational functions:
  - If the exponents on the leading terms are the same, there is a horizontal asymptote.
  - If the exponent on the leading term in the denominator is larger than that of the numerator, the horizontal asymptote is y = 0 (i.e. the x-axis)
  - If the exponent of the leading term in the numerator is 1 larger than that of the denominator, then use long division to find the slant asymptote.
  - The values that make the denominator = 0 are where you have vertical asymptotes. (exception: if you factor the numerator and denominator and a factor in the denominator cancels, then the value that made that factor = 0 will be a "hole" in your graph and not an asymptote.)
- Sketch the graphs of polynomial functions.
- Factor the numerator and denominator and cancel if possible. (There will be a "hole" in your graph if a factor in the denominator cancels.)
- Find the y-intercept by letting x = 0.
- Find the x-intercepts by letting y = 0.
- Draw vertical asymptotes at the values that make the denominator = 0.
- Determine whether there are horizontal or slant asymptotes.
- Find points in all of your intervals (between asymptotes and zeros) to get an accurate picture.

Pages 206-208:

#1-5: Use your calculator.

#23-31: Use the TABLE function on your calculator to find points.

#43: Use the formula for compound interest. Enter P(1 + (r/n))^(nt) in your calculator.

#47: Use the formula for continuously compounding interest.

#55: Either enter each value separately, or enter the equation into [y=] and then use the TABLE function. For TBLSET, set indpnt to "Ask." Then when you press [TABLE] you will be able to type in the x-values that you want corresponding y-values for. (Note: On your calculator, y will stand for P(t) and x will stand for t in your problem.)

#57: For part (c), set your window to $0 < x < 5000$ (scale = 1000) and $0 < y < 25$ (scale = 5)

Pages 216-18:

#19-25: Look at #20. For this problem, $f(4) = \log_{16} 4$, which means $16^n = 4$. Change to $4^{2n} = 4^n$. So, $2n = 1$ and $n = ½$.

#39-49: For the domain: Remember that the "stuff" you take the log of (called the argument) must be greater than 0. Set the argument > 0 and solve to find the domain.
For the x-intercept: Let $f(x) = 0$ and solve for x. (Hint: After setting $f(x) = 0$, change it to an exponential equation).
For the asymptotes: Remember that the asymptote will occur when the value of your argument *equals* 0.
For the table: Take out f(x) and put in y. So for #39 you have $y = \log_4 x$. Change this to the exponential form of $4^y = x$. (It isn't necessary for #39, but for the others, you may need to solve the equation for the log expression before you change it into exponential form. See note below for #41.) In your table, instead of putting in values for x, put them in for y and then solve for x. Put in just a few values to get the idea of the shape of your graph.

#41: When it comes to making the table, write your equation as $y = -\log_3 x + 2$. Then solve for the log expression to get:

$$y = -\log_3 x + 2$$
$$y - 2 = -\log_3 x$$
$$-y + 2 = \log_3 x$$
$$\log_3 x = 2 - y$$

Write this in exponential form to get $3^{2-y} = x$. Now you can put values in for y and solve for x in your table.

#57a: Put these amounts into the formula for x and solve.

#57b: The time that you got in part a) was the number of years for the mortgage with that monthly payment. To find the total paid over the life of the loan, take the monthly payment and multiply it by the number of months represented by the number of years that you found for part a).

#57c: Take the total paid over the life of the loan (found in part b)) and subtract the principal ($150,000). What is left is the interest paid. Does this amount surprise you?