Week 15 Pre-Calc Assignment:

Day 1: pp. 376-379 #1-29 odd
Day 2: pp. 376-379 #31-37 odd, 43-53 odd, 59, 61, 69, 71, 75
Day 3: pp. 384-386 #1-41 odd
Day 4: pp. 384-386 #45-63 odd, 69-73 odd, 97-103 odd

Notes on Assignment:

Pages 376-379:

#1-5: Substitute the values into the equation and make sure the equation is true.

#7-19: There are no restriction on the answers, so make sure you put $+2n\pi$ or $+n\pi$ (whichever is appropriate for your trig function).

#21-31: Notice that there is a restriction on these. Your answers must be on the interval $[0, 2\pi)$.

#33-37: Solve for the argument first, then solve for x. Remember to include the $+2n\pi$ or $+n\pi$ (whichever is appropriate for your trig function).

#45-53: To solve an equation graphically using a graphing calculator, you graph each side separately and then see where the graphs intersect. In the case of these problems, all but #47 have zero on the right side. If you graph y=0 you just get the x-axis. That means that what you are really looking for are the x-intercepts of your other equation. You can use the [TRACE] function to find these, or use [CALC] [zero] to find the x-intercepts. For #47, you will graph the left and right sides separately, and then use the [CALC] [intersect] function to see where the 2 graphs intersect.

#59-61: Solve these by factoring, but then take the inverse trig function ($\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$, etc.) of both sides to finish.

#69: Let y = 0 and solve the equation. I suggest multiplying by 12 on both sides and then getting cos 8t on one side and 3sin 8t on the other. Notice that if you divide both sides by cos 8t, you will get tan 8t. Continue to solve for tan 8t. Solve for 8t using $\tan^{-1}$. Then solve for t by dividing both sides by 8. (Note: Your restriction on t is $0 \le t \le 1$, so when solving for 8t, remember that $0 \le 8t \le 8$. Use reference angles to find the angles in that range.

#71: Put this equation into [y=] and then look at the table. For [TBLSET] have your x value start at 1 and go up by 1. Then look at your table and see which months exceed 100,000 units.

#75a): You should know how to do this by now!

#75b): Use [STAT] [CALC] [SinReg] to get the equation. When you see "SinReg" on your screen, enter L1, L2, Y1. (NOTE: L1 and L2 are the lists that you put your data into. You can use [2^{nd}] [1] and [2^{nd}] [2] for these. If you called your lists something else, then to get them on the screen you will need to press [LIST] [your list name]. For Y1 you **must** use [VARS] [Y-VARS] [Function] [Y1]. When you push [ENTER] you will get one of the equations listed in part (b). You do not need to explain your reasoning.

#75c): The average will be shown by the line that the sine curve oscillates around. What would that line be, according to your equation?

#75d): To see what the period is, remember that the period is 2π divided by the coefficient of t in your equation. Also, remember that t stands for years.

#75e): Because we entered the equation in Y1, we can hit [GRAPH] and see the graph of your model equation. (You may have to zoom or adjust your window.) To find when the rate will be 6.5% or more, use the [TRACE] feature to see when the y-coordinate is over 6.5. Look at what the x-coordinate is and what year it corresponds to. Alternatively, you can use the [TABLE] function to look at the table for the equation instead.

Pages 384-386:

#1-5: Use the sum and difference formulas.

#7-13: Using the given sums and differences, use the sum and difference formulas. Pick either sine or cosine. Once you have found either the sine or cosine, then use $\sin^2 x+\cos^2 x=1$ to find the other trig function. Finally, use $\tan x = \sin x/\cos x$ to find tangent.

#15-21: These are the same as #7-13, but you must come up with the sum or difference that you will use.

#23-29: These are using the sum and difference formulas in reverse.

#31-35: These are done the same as #23-29, but after writing it in terms of the trig function, you must come up with the actual value of the expression.

#37-49: Before doing these problems, you need to use $\sin^2 x+\cos^2 x=1$ to find $\cos u$ and $\sin v$.

#51-53: Expand using the sum and difference formulas and then simplify.

#55-63: Try expanding the trig functions that have sums and differences first.

#69-71: Expand using the sum and difference formulas and then solve the resulting equation.

#97-99: Remember that to find the inverse, exchange x and y and then solve for y.

#101-103: Remember that when the bases are the same, the log and exponential expression “undo” each other.