# Week 23 Pre-Calc Assignment:

Day 1:  pp. 631-633 #1-43 odd
Day 2:  pp. 631-633 #45-75 odd, 79-85d odd
Day 3:  pp. 640-643 #1-45 odd
Day 4:  pp. 640-643 #47-89 odd, 97a,c, 119-131 odd


## Notes on Assignment:

### Pages 631-633:

#1-9:  Subtract to see if you get a common difference.

#11-17:  List the terms and then see if it is arithmetic by subtracting back.

#19-23:  Using the recursive formula, find the first 5 terms.  After finding the common
   difference, find $a_n$ by using the formula $a_n = a_1 + (n-1)d$.

#29:  If you don't know $d$, then you must find it by writing $a_{12} = a_1 + 11d$.

#31:  Follow the same procedure as in #29.

#33-43:  If you know $d$ and $a_1$, you can put them into the general formula
   $a_n = a_1 + (n-1)d$.  If you don't know $d$ and $a_1$, then you must find them as you
   did in numbers 29 and 31.

#49-51:  Make sure you are in SEQ mode.  Enter the sequence into the graphing calculator
   at the [Y=] screen.  Set $n$Min=1 if it is not that already.  Set the graph to dotted and
   press [GRAPH].  Press [WINDOW] to see that your $n$Min=1 and your $n$Max=10
   (because you are to graph the first 10 terms).  Then, to see the whole graph, press
   [ZOOM] [ZoomFit].  To see the individual terms, use [TRACE] and the left and right
   arrows.

#53-59: Use the formula $S_n = \dfrac{n}{2}(a_1 + a_n)$.  You may have to calculate the $n$th term before
   using the formula.  If that is the case, find $d$ by subtracting, and then find the $n$th
   term by using the formula $a_n = a_1 + (n-1)d$.

#61-67: Do these the same as #53-59, except you will be able to easily calculate the terms $a_1$ and $a_n$.

#69-73: Press [2$^{nd}$][LIST] [MATH][sum( ] [2$^{nd}$][LIST] [OPS][seq( ] *expression, n, start, stop*)) [ENTER].

#75: Write as a sequence first.

#79: Do this as we did the example in class.

#81: Find $d$ as you did in #29, since you know the first term and the 18$^{th}$ term. Then find the sum of the finite sequence.

#83: You are finding the 10$^{th}$ term of the sequence. Find $d$ and then find $a_n$.

#85a): Using the values of $n$ and $a_n$, determine the sequence. Since the difference between the terms is not always the same, you need to come up with a sequence that most closely models the table. To do this, use 19,188 as the first term and 29,676 as the last term. There must be 10 $d$'s between those terms, so 29,676 = 19,188 +10$d$. Solve for $d$ and write what $a_n$ equals.

#85b): Enter the values of of $n$ and $a_n$ into 2 lists. Use the regression feature to find the linear model. Do this by [STAT][CALC][LinReg] L1, L2, [VARS][Y-VARS] [Function] [Y1].

#85c): If you followed the instructions for part b), then the equation is already entered into equation Y1. Press [GRAPH] to see it. (You will have to change your mode to Func to be able to see the graph, since it's a linear equation and not a sequence.) And then press [ZOOM][ZoomStat]. Make sure your StatPlot is turned on so you can see that, too.

#85d): Use [2$^{nd}$][CALC][value] and then type in the value for 2001 and 2003 (i.e. 11 and 13).

### Pages 640-643:

#1-9: Divide back to see if you get a common ratio.

#11-19: Multiply each successive term by $r$.

#21-25: Using the recursive formula, find the first 5 terms. After finding the common ratio, find $a_n$ by using the formula $a_n = a_1 r^{n-1}$.

#27-33:  Use the formula $a_n = a_1 r^{n-1}$.

#35: Find $r$ by writing $a_4 = a_1 r^3$.  Fill in the values known and solve for $r$.  Then use the
formula $a_n = a_1 r^{n-1}$.

#37:  Do the same as in #35.

#43-49: Make sure you are in SEQ mode.  Enter the sequence into the graphing calculator
at the [Y=] screen.  Set $n$Min=1 if it is not that already.  Set the graph to dotted and
press [GRAPH].  Press [WINDOW] to see that your $n$Min=1 and your $n$Max=10
(because you are to graph the first 10 terms).  Then, to see the whole graph, press
[ZOOM] [ZoomFit].  To see the individual terms, use [TRACE] and the left and right
arrows.

#51-69:  Use the formula $$S_n = a_1 \left( \frac{1 - r^n}{1 - r} \right).$$  Remember that if the index begins at 0, you
need to add the first term separately.

#71-75:  The general form for the summation notation is $\sum\limits_{i=1}^{n} a_1 r^{i-1}$ so you need to find the
first term and then the common ration.  Then fill in the above formula.

#77-89:  Use the formula $$S = \frac{a_1}{1 - r}.$$

#95a): Enter the values of the table into lists L1 and L2.  Enter the values of of $n$ and $a_n$ into
lists L1 and L2.  Use the regression feature to find the linear model.  Do this by
[STAT][CALC][ExpReg] L1, L2, [VARS][Y-VARS][Function][Y1].

#95c):  Use [2nd][CALC][value] and then type in the value for 2010 (i.e. 10).

#101:  Find $S_{60}$ for the series.

#127-129:  Factor and cancel as you perform the operations.

#131:  Determine the LCM (i.e. common denominator) and multiply each fraction by 1 in
order to get the common denominator.