**Tasks for 15/01/2018**

**Value of polynomial sum:** Given the value of x and the coefficients *an* supplied, calculate the value of the polynomial sum

**Evaluation of *Sin(x)* within a given error limit by adding up the series:** Use power series expansion in order to evaluate *Sin(x)* for a given *x.* Truncate the series when the value reaches within the accuracy of allowed error *e* (User defined error limit) set by you.

**Machine epsilon:** Determine machine epsilon for the computer you are using. Do this for both single precision and double precision floating point numbers.

**Computer arithmetic 1:** Evaluate the expression in two ways   
(a)   
(b)   
for small values of *x*, *x*=[0.1, 0.01, 0.001,0.0001, ..., and so on]. Determine the relative error in both the methods of performing the subtraction. Make a plot of *x* vs. Error in logarithmic scale. Which method is superior, and why?

**Computer arithmetic 2:** It is desired to calculate all integral powers of the number .  
It turns out that the integral powers of *x* satisfy a recursive relation:

Show that the above recurrence relation is unstable by calculating *x*14, *x*30, *x*40 and *x*50 from the recurrence relation and comparing with the actual values obtained by using inbuilt function e.g., (a^b) in matlab.