Digital Image Processing
Assignment Number 1
Fourier Transformation

1. Compute the Fourier Coefficients $(a_0, a_1, a_2, ...a_n, , b_1, b_2, ...b_n)$for the following function.

$$y = x^2$$

Plot this function using "GnuPlot" software. Verify your answer by plotting the Fourier Series.

2. Write a program (C, C++ or any other language of your choice) to compute the following function.

$$F(x) = \sum_{k=1}^{1000} \frac{1}{(2k-1)} sin(2k-1)x$$

Compute the following:

(a) F(1.5)
(b) F(5.9)
(c) F(6.3)
(d) F(-0.6)