Parul University
Faculty of Engineering & Technology
Department of Applied Sciences and Humanities
1st Year B.Tech Programme (All Branches)
Mathematics – 1 (303191101)
Unit – 5 Fourier Series

Tutorial 4

1.	Find the Fourier series of $f(x) = \left(\frac{\pi - x}{2}\right)^2$, $0 \le x \le 2\pi$
2.	Find the Fourier series of f(x) = $2x - x^2$ in (0,3)
3.	Find Fourier Series for the function f(x)= $\begin{cases} 1 + \frac{2x}{\pi} & -\pi \le x \le 0 \\ 1 - \frac{2x}{\pi} & 0 \le x \le \pi \end{cases}$ deduce that : $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} + \cdots = \frac{\pi^2}{8}$
4.	Find Fourier Series for the function f(x)= $\begin{cases} -\pi - \pi < x < 0 \\ x\ 0 < x < \pi \end{cases}$
5.	Express half range Sine series for f(x)= e^x , 0<x<1
6.	Express half range Cosine series for f(x) = x, 0<x<3
7.	Find the Fourier Series of $f(x) = 1 - x^2$ in the interval $(-1,1)$
8.	Express $f(x) = \sin ax$ in the interval $(-\pi, \pi)$