Department of Physics
Indian Institute of Technology
Kharagpur-721302, West Bengal, India

Subject No. PH49012 (Computational Physics Lab)

Lab Sheet - 1

§1. Consider two linear equations, $a\,x + b\,y = c$ and $p\,x + q\,y = r$. Write a simple code to calculate x and y by considering the other quantities as inputs.

§2. Consider the Taylor expansion for $\sin(x) = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1}$. The recurance relation for this case is $(i+1)^{th}\text{term} = \frac{-x^2}{2i\,(2i+1)} i^{th}\,\text{term}$.

(i) Write a code to compute $\sin(x)$ for $x = \pi/4$ and $n = 10$
(ii) Extend the same code to compute $\sin(x)$ considering x as a varible in the range $[0, \pi]$ and $n = 10$.