

Tutorial 12

1. Find the Fourier series of the following function

(a) $f(x) = \begin{cases} 2 & x \in [0, \pi) \\ 0 & x \in (-\pi, 0) \end{cases}$

(b) $f(x) = c + mx$ on $(-\pi, \pi)$

(c) $f(x) = \sin(ax)$ on $(-\pi, \pi)$

2. let $f : \mathbb{R} \rightarrow \mathbb{R}$ be a function satisfying $f(x + \pi) = -f(x)$, show that if $f(x) = b_0 + \sum_{k=1}^{\infty} a_n \sin(nx) + b_n \sin(nx)$ then for all even n , $a_n = b_n = 0$