

Math 54 Handout 19

August 3, 2018

Question 1.

Find the eigenvalues λ and eigenfunctions of the following:

1.
$$\begin{cases} y'' + \lambda y = 0; & 0 \leq t \leq 2\pi \\ y(0) = y(2\pi); & y'(0) = y'(2\pi) \end{cases}$$
2.
$$\begin{cases} y'' + \lambda y = 0; & 0 \leq t \leq \pi/2 \\ y'(0) = 0; & y'(\pi/2) = 0 \end{cases}$$

Question 2.

Compute the Fourier series for

$$f(x) = \begin{cases} -1, & -\pi \leq x \leq 0 \\ 1, & 0 \leq x \leq \pi \end{cases}$$