Q.1: Find Fourier series expansion of \( f(x) = \begin{cases} 0 & -\pi < x < 0 \\ \pi - x & 0 < x < \pi \end{cases} \)
Q.2: Find eigenvalues and eigenfunctions of $y'' + \lambda y = 0, \ y'(0) = 0, \ y'(L) = 0$.

Q.3: Write $xy'' + (1 - x)y' + ny = 0, \ n = 0, 1, 2, \cdots$ into self-adjoint form.