Q.1: Find the temperature $u(x, t)$ in a rod of length $\frac{\pi}{3}$ if its initial temperature is $f(x) = x$ throughout and if its ends at $x = 0$ and $x = \frac{\pi}{3}$ are insulated.
Q.2: Solve the wave equation $\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial t^2}$ subject to the conditions $u(0, t) = 0$, $u(1, t) = 0$, $u(x, 0) = 0.2 \sin(4\pi x)$ and $\frac{\partial u}{\partial t}|_{t=0} = 0$. 