Tutorial - 02

Q. In the string bead system prove that

$$y_{N+2}(t) = -y_N(t)$$

$$y_{N+3}(t) = -y_{N-1}(t)$$

$$y_{N+4}(t) = -y_{N-2}(t)$$

Q. If $\phi = \pi/4$; plot $y_{n=1}(t)$ at

$$t = 0, \quad t = \pi/4\omega, \quad t = \frac{\pi}{2\omega}, \quad t = \frac{3\pi}{4\omega}$$

$$t = \frac{\pi}{\omega}$$

Q. Prove that in the continuous case the string displacement satisfies

$$\frac{\partial^2 y}{\partial t^2} = \frac{T}{\rho} \frac{\partial^2 y}{\partial x^2}$$

Q. Prove the following

$$\frac{2}{L} \int_0^L dx \, \sin\left(\frac{n\pi}{L} x\right) \sin\left(\frac{m\pi}{L} x\right) = \delta_{nm}$$

for $m, n \in \mathbb{Z}$
(being integers)