(a) A string is started at time 0 in the configuration

$$y(x,0) = Ae_n(x) = A\sqrt{\frac{2}{L}}\sin\left(\frac{n\pi x}{L}\right)$$

$$\frac{\partial y}{\partial t}(x,0) = 0$$

Recalling that the frequency of the nth normal mode, e_n, is

$$\omega_n = v_0 k_n = \sqrt{\frac{T}{\rho}}\left(\frac{n\pi}{L}\right)$$

find the displacement of the point at *x* at an arbitrary time *t*, *y*(*x*,*t*).

(b) A string is started at time 0 in the configuration

$$y(x,0) = 0$$

$$\frac{\partial y}{\partial t}(x,0) = Be_n(x) = B\sqrt{\frac{2}{L}}\sin\left(\frac{n\pi x}{L}\right)$$

find the displacement of the point at *x* at an arbitrary time *t*, *y*(*x*,*t*).