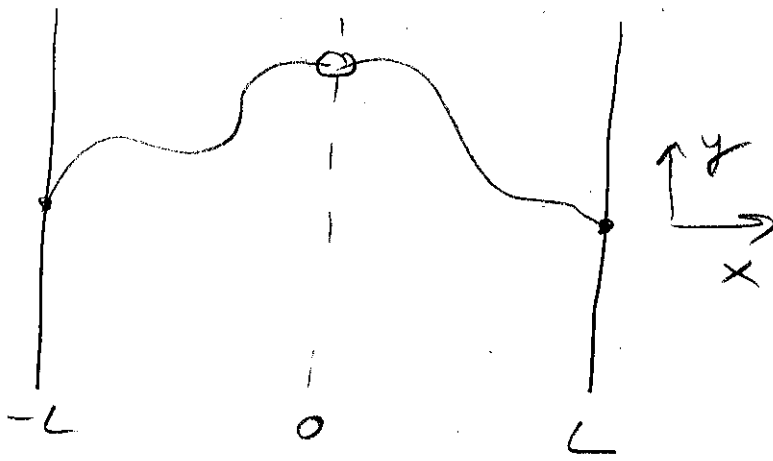


התנאים הם יחידים



הק 222

$$y_L(x,t) = (A_L \cos k_L x + B_L \sin k_L x) \cos(\omega_L t + \varphi)$$

$$y_R(x,t) = (A_R \cos k_R x + B_R \sin k_R x) \cos(\omega_R t + \varphi)$$

$$(1) \left. \frac{\partial y_L}{\partial x} \right|_{x=0} = 0 \Rightarrow B_L = 0$$

$$(2) \left. \frac{\partial y_R}{\partial x} \right|_{x=0} = 0 \Rightarrow B_R = 0$$

$$(3) y_L(-L, 0) = 0 \Rightarrow \cos k_L x = 0 \Rightarrow k_L = \frac{\pi}{2} + \pi n_1$$

$$(4) y_R(L, 0) = 0 \Rightarrow \cos k_R x = 0 \Rightarrow k_R = \frac{\pi}{2} + \pi n_2$$

$$(5) y_L(0, t) = y_R(0, t) \Rightarrow A_L \cos(\omega_L t + \varphi) = A_R \cos(\omega_R t + \varphi)$$

$$(6) \left. \frac{\partial y_L}{\partial t} \right|_{x=0} = \left. \frac{\partial y_R}{\partial t} \right|_{x=0} \quad (7) \frac{\partial^2 y_L}{\partial t^2} = \frac{\partial^2 y_R}{\partial t^2} \quad \begin{matrix} (7) \\ (5) \end{matrix} \Rightarrow \omega_R = \omega_L$$

$$\begin{matrix} (6) \\ (5) \end{matrix} \Rightarrow \varphi_R = \varphi_L$$

$$\Rightarrow y(x,t) = A \cos kx \cos(\omega t + \varphi)$$

התנאים הם יחידים

$$\left. \frac{\partial y}{\partial x} \right|_{x=0} = 0 \text{ סוף}$$

$$y(x,t) = (A \cos kx + B \sin kx) \cos(\omega t + \varphi)$$

$$\left. \frac{\partial y}{\partial x} \right|_{x=0} = 0 \Rightarrow B = 0$$

$$y(\pm L, t) = 0 \Rightarrow \cos(kL) = 0 \Rightarrow k = \frac{\pi}{2} + \pi n$$

... סוף