$$|n_0=1\rangle \rightarrow \sqrt{\frac{2}{L}}\cos\left(\frac{\pi}{L}x\right) \qquad (א)$$

(ב) הסתברות המעבר לרמות $n=2,4,6...$ היא אפס.

$$P(n|n_0) = \left| \int_{-\infty}^{\infty} V_{n,1}\, e^{i(E_n-E_1)t}\, dt \right|^2$$

$$V_{n,1} = \frac{2}{L}\varepsilon\, e^{-\frac{1}{2}\left(\frac{t}{\tau}\right)^2} \qquad n=1,3,5\ ...$$

$$P(n|n_0) = \frac{4}{L^2}\varepsilon^2\, 2\pi\,\tau^2\, e^{-\left[\left(\frac{1}{2m}\left(\frac{\pi}{L}\right)^2(n^2-1)\right)\tau\right]^2}$$

$$|\psi(t=0)\rangle \rightarrow \sqrt{\alpha}\, e^{-\alpha|x|} \qquad \alpha = m\varepsilon \qquad (ג)$$

$$\left|\frac{\partial V}{\partial t}\right| \ll \Delta^2 \quad \Rightarrow \quad \frac{1}{L}\frac{\varepsilon}{\tau} \ll \left(\frac{1}{mL^2}\right)^2 \qquad (ד)$$