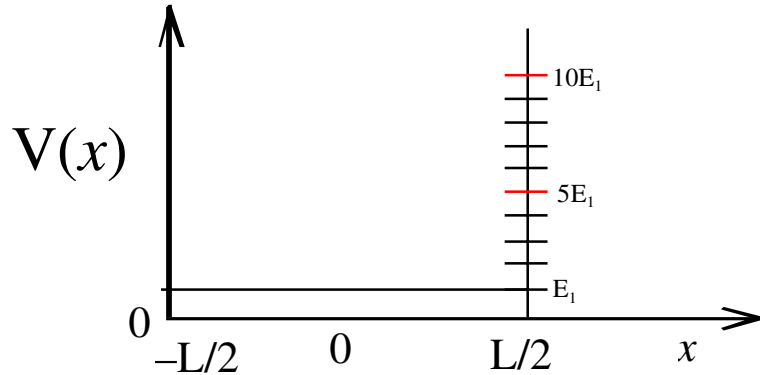


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Quiz 2

September 6, 2002

1. A. Consider the infinite one-dimensional box



Draw in the energies of the $n = 2$ and $n = 3$ levels and specify the number of internal nodes in ψ_3 .

- B. What is $\psi_n(-L/2)$ for all n ? $\psi_n(x)$ is a normalized eigenfunction.
- C. What is $\psi_n(0)$ for all odd n ?
- D. What is $\psi_n(0)$ for all even n ?
- E. The momentum, p , for the particle inside the box is

$$p_n = \pm[2mE_n]^{1/2}$$

Sketch the probability distribution $P(p)$ for the momentum of a particle in an eigenstate of an infinite one-dimensional box.

