$$\psi_n = \sqrt{\frac{2}{\mathrm{L}}}\sin\left(\frac{n\pi}{L}x\right)$$

$$\text{with } n = 1,2,3,\ldots$$

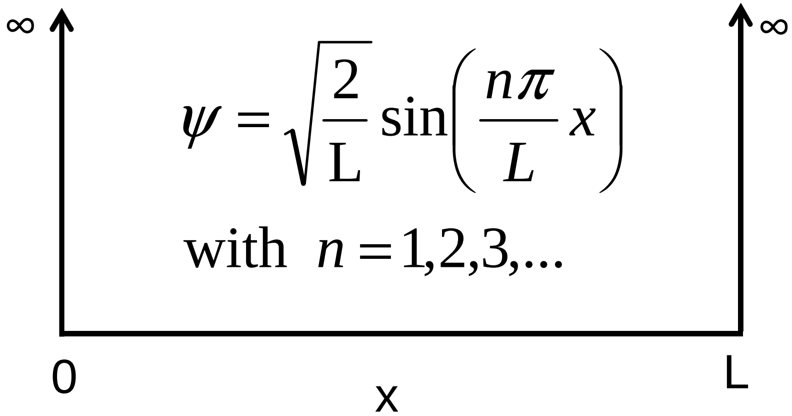
Which of the following quantities is exactly determined for an electron in one the states?

(A) Energy (B) Momentum

(C) Position (D) None of these

(E) More than one of these

Electron in infinite square well potential



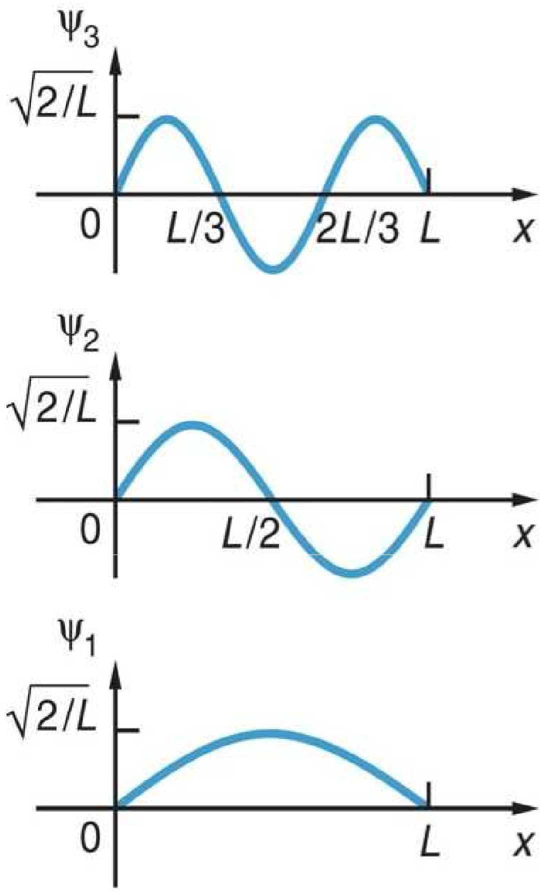
$$\psi = 0$$

$$\psi = \sqrt{\frac{2}{\mathrm{L}}}\sin\left(\frac{n\pi}{L}x\right)$$

with $n = 1,2,3,\ldots$

$$\psi = 0$$

How do the wave functions for the first states look like?



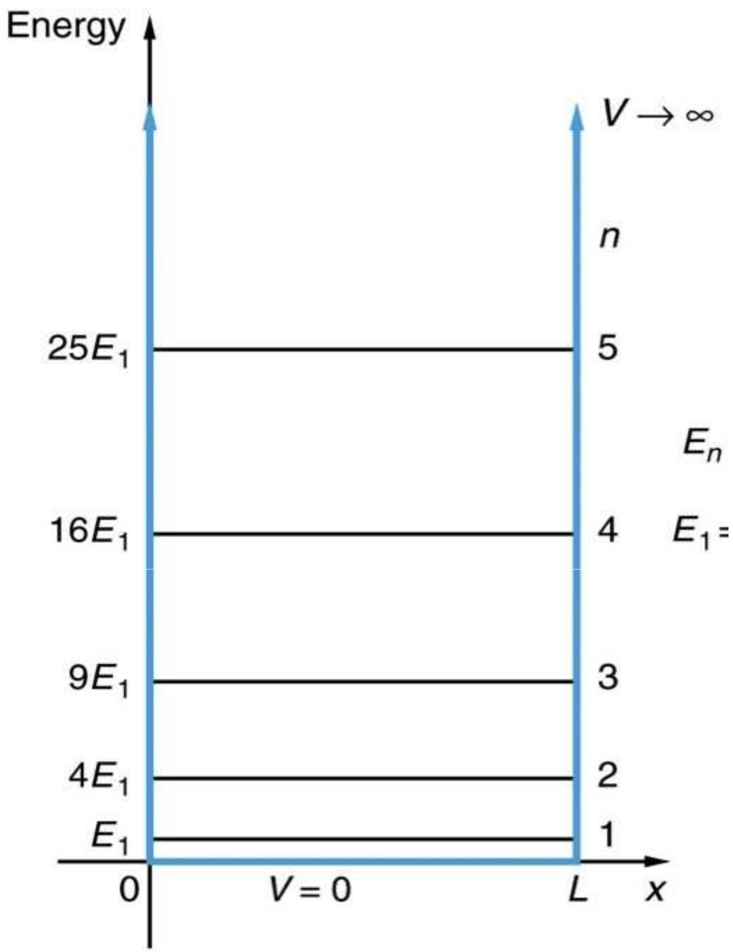
$$\Psi(x,t) = \sqrt{\frac{2}{L}} \sin\left(\frac{n\pi x}{L}\right) e^{-iEt/\hbar}$$

How does probability of finding electron close to L/2 if in n =3 excited state compared to probability for when n=2 excited state?

(A) much more likely for n=3.

(B) equal prob. for both

(C) much more likely for n=2



$$E_n = \frac{n^2 \pi^2 \hbar^2}{2mL^2}$$

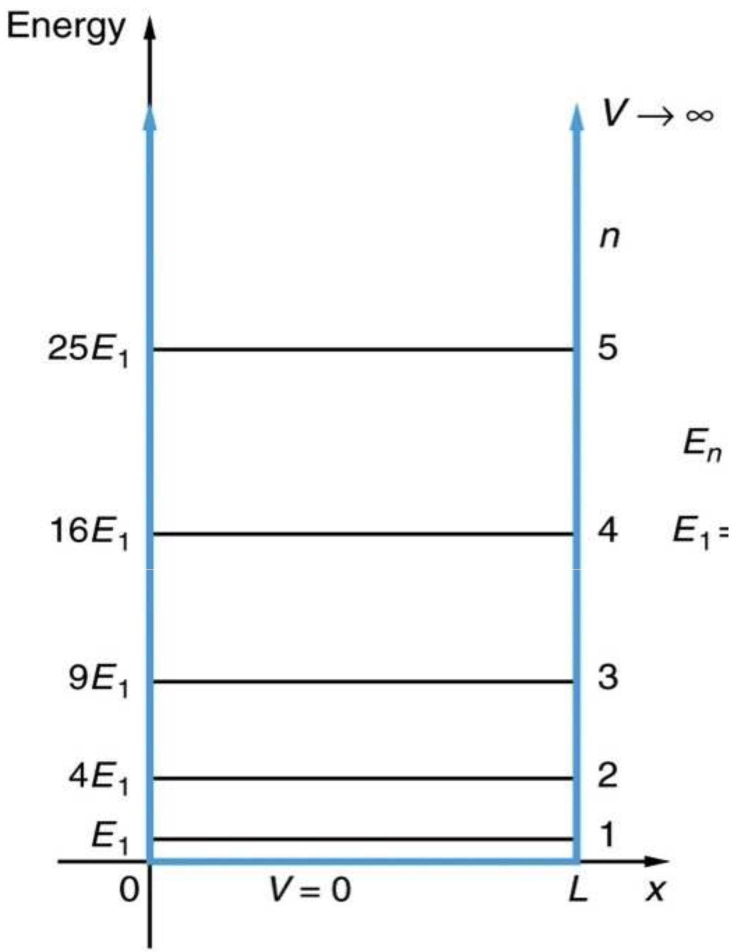
What is the potential energy for the 4th excited state?

(A) E_1

(B) 0

(C) ∞

(D) Could be anything



$$E_n = \frac{n^2 \pi^2 \hbar^2}{2mL^2}$$

Discrete energy values
→ quantization

Consider the ground state (n=1). Is the uncertainty principle fulfilled?

(A) Yes (B) No