

Particle in an Infinite Square Well Potential 2

A particle of mass m is in an infinite square well potential at $0 < x < L$.

The particle is initially in the state:

$$\psi(x, t = 0) = A \sin^2(\pi x/L)$$

1. Determine A
2. At $t = 0$, what is the probability of finding the particle to have the ground state energy?
3. Find the state of the particle at a later time t . Write out the first two non-zero terms of the energy eigenstate expansion of the time evolved state.
4. What is the probability of finding the particle to have the ground state energy at a later time t ?