

Particle in an Infinite Square Well Potential 1

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

The particle is initially in the state:

$$|\psi(t=0)\rangle = A(|\varphi_1\rangle) + 2i|\varphi_4\rangle - 3|\varphi_{10}\rangle$$

1. Determine A
2. At $t = 0$ what is the probability of measuring the energy of the particle to be $\frac{8\pi^2\hbar^2}{mL^2}$?
3. Find state of the particle at a later time t .
4. What is the probability of measuring the energy of the particle to be the same value at a later time t ?