Representations of the Infinite Square Well

Consider three particles of mass m which are each in an infinite square well potential at $0 < x < L$.
The energy eigenstates of the infinite square well are:

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

with energies $E_n = \frac{n^2\pi^2\hbar^2}{2mL^2}$
The particles are initially in the states, respectively:

$$\begin{aligned} |\psi_a(0)\rangle &= A\Big[2i\,|E_4\rangle - 3\,|E_{10}\rangle\Big] \\ \psi_b(x,0) &= B\left[i\sqrt{\frac{8}{L}}\sin\left(\frac{4\pi x}{L}\right) - \sqrt{\frac{18}{L}}\sin\left(\frac{10\pi x}{L}\right)\right] \\ \psi_c(x,0) &= Cx(x-L) \end{aligned}$$

For each particle:

1. Determine the normalization constant.
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 $\frac{8\pi^2\hbar^2}{mL^2}$ at a later time t?
5. What is the probability of finding the particle to be in the first half of the well?