Worksheet #13

(Monday, October 30, 2023)

Name

Questions (5 pts):

Consider a system whose initial state at $t_0 = 0$ is given in terms of eigenvectors of

the (time-independent) Hamiltonian as follows: $|\psi(0)\rangle = \frac{1}{\sqrt{2}}|\varphi_1\rangle + \frac{1}{2}|\varphi_2\rangle - \frac{1}{2}|\varphi_3\rangle$.

1)   If the energies corresponding to $|\varphi_1\rangle, |\varphi_2\rangle, |\varphi_3\rangle$ are E_1, E_2, and E_3,

respectively, what is the state of the system $|\psi(t)\rangle$ at any later time t ?

2) How is the average energy at t =0 compares to that at a later time t? Explain.