

PHY 6646 - Quantum Mechanics II - Spring 2021
Homework set # 9, due March 19

1. Derive Eq. (17.3.22) from Eqs. (17.3.12) and (17.3.21) in Shankar's book.

2. Problems 18.2.1, 18.2.2, 18.2.4 and 18.2.5 in Shankar's book.

3. Consider a particle in the ground state of a box of length L . Argue on semiclassical grounds that the natural time period associated with this state is $T \simeq mL^2/\hbar\pi$. If the box expands asymmetrically to double its size, from $0 < x < L$ to $0 < x < 2L$, in time $\tau \ll T$ what is the probability of catching the particle in the ground state of the new box?

4. Problems 18.4.3 and 18.4.4 in Shankar's book.