

Homework 4

Due Wednesday 18 November

1. 5.2.6, p. 164 from Shankar
2. 5.4.2, p. 175 from Shankar
3. Consider an infinite square well located between  $-L/2$  and  $L/2$ . A particle of mass  $m$  is in an energy eigenstate  $\psi_n(x)$  of the system.
  - a) Calculate the momentum probability density for this state. Assume that  $n$  is a large even number.
  - b) Plot the momentum probability density.
  - c) What value(s) of momentum is (are) most likely (i.e., has (have) the highest probability density). Is that result to be expected?