

Physics 267: Problem #13

1. Calculate the energy for free particles that have a 1 nm wavelength. Calculate this for a photon, electron, proton, and a human. Give your answer in eV.
2. For the 1D particle in a box, draw the wave function for the lowest three energy states.
3. For the 1D particle in a box, draw the probability distribution  $P(x)$  for the lowest three energy states.
4. If the momentum of the particle in the 1D box is measured, what are the possible momentum values for the  $n=1$  state?