Solution

1. Which has more bound states?

   a. particle in a finite well
   b. particle in an infinite well
   c. both have the same number of bound states.

A particle in an infinite well has an *infinite* number of states.

2. For a particle in a *finite* square well, which of the following will *decrease* the number of bound states?

   a. decrease well depth U_0
   b. decrease well width L
   c. decrease m, mass of particle

3. Compare the energy $E_{1,finite}$ of the lowest state of a finite well with the energy $E_{1,infinite}$ of the lowest state of an infinite well of the same width L.

a. $E_{1,finite} < E_{1,infinite}$ b. $E_{1,finite} > E_{1,infinite}$ c. $E_{1,finite} = E_{1,infinite}$