Infinite Square Well Potential

Figure 6-2 Infinite square well potential energy. For $0 < x < L$, the potential energy $V(x)$ is zero. Outside this region, $V(x)$ is infinite. The particle is confined to the region in the well $0 < x < L$. 
Figure 6-3  Graph of energy vs. $x$ for a particle in an infinitely deep well. The potential energy $V(x)$ is shown with the colored lines. The set of allowed values for the particle’s total energy $E_n$ as given by Equation 6-24 form the energy-level diagram for the infinite square well potential. Classically, a particle can have any value of energy. Quantum mechanically, only the values given by $E_n = n^2(\hbar^2\pi^2/2mL^2)$ yield well-behaved solutions of the Schrödinger equation. As we become more familiar with energy-level diagrams, the $x$ axis will be omitted.
Finite Square Well Potential

\[ V(x) \]

\[ 0 \quad L \quad x \]

\[ \psi_1 \]

\[ \psi_2 \]

\[ \psi_3 \]

\[ \psi_1^2 \]

\[ \psi_2^2 \]

\[ \psi_3^2 \]