

Schrodinger Equation Rules

With three simple rules (and no math) you can figure out qualitatively what a wavefunction will look like, even for complicated potentials.

- 1. The ground state wavefunction has zero nodes, the first excited state has one node, and so on (this is true for bound states of one-dimensional potentials).**
- 2. If the energy of the wavefunction is below the potential, the wavefunction will decay approximately exponentially. For an example, look at the shape of the wavefunction for the particle in a finite box in the region outside the box (where it tunnels).**
- 3. If the energy of the wavefunction is above the potential, the wavefunction will oscillate (roughly like a sine wave); the higher the energy is above the potential, the more rapidly it will oscillate.**