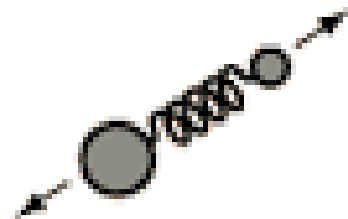
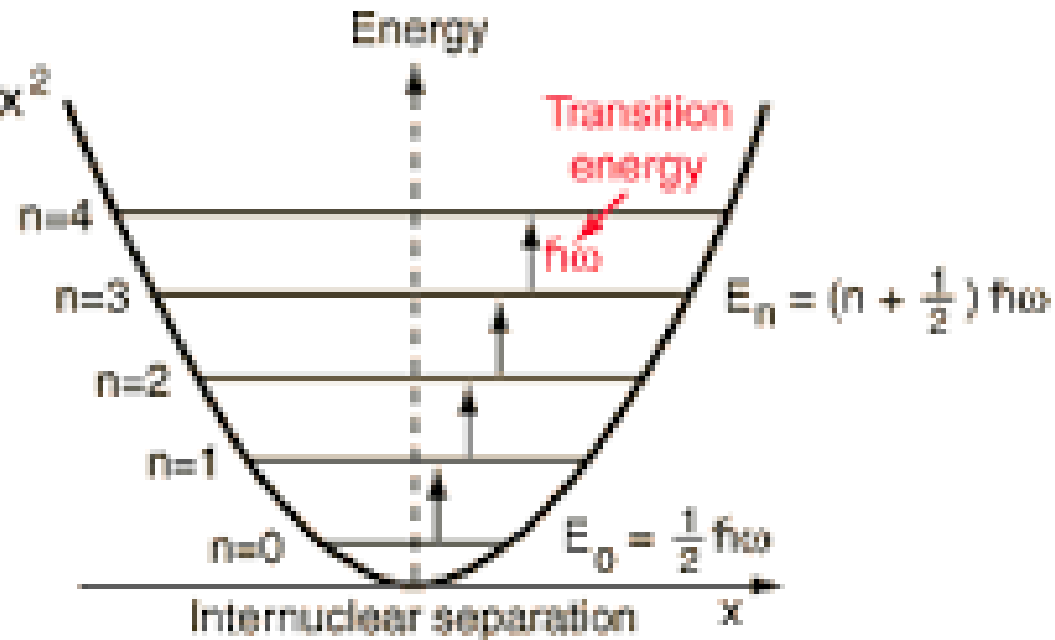


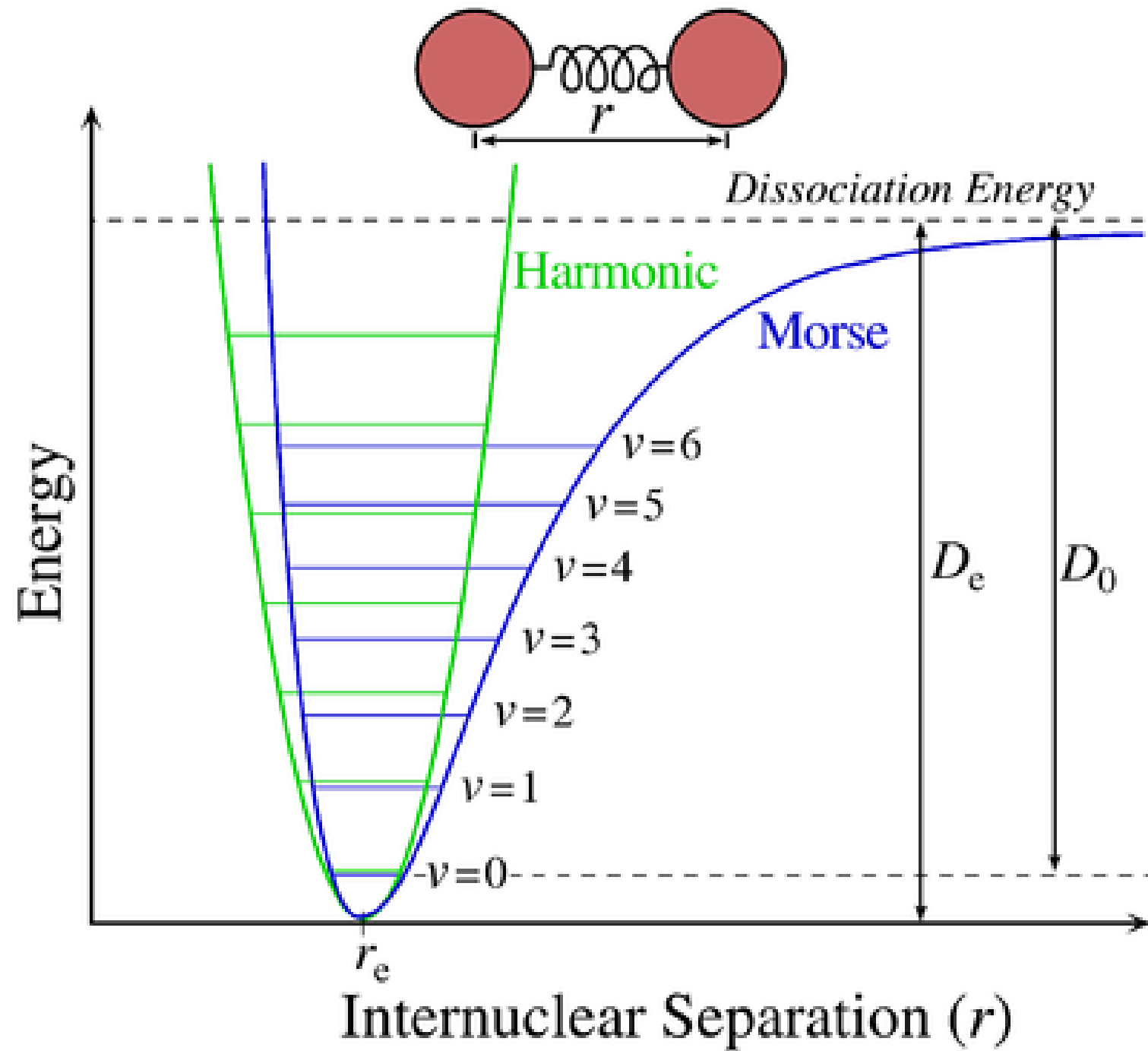
# Simple Harmonic Oscillator

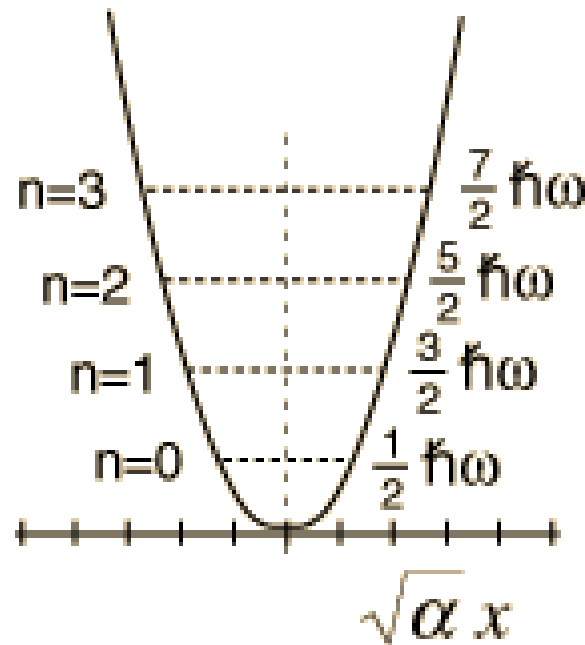
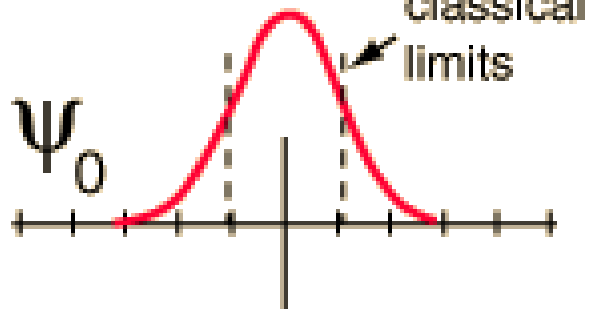
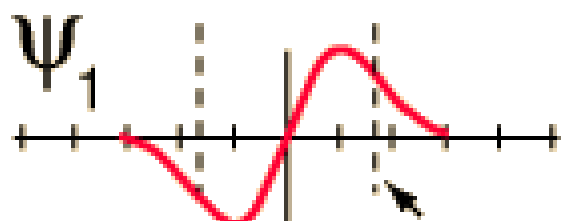
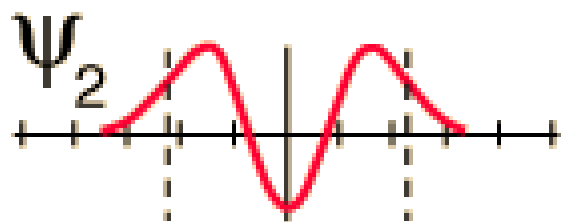
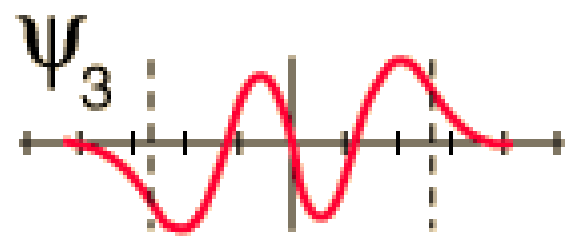
Potential energy  
of form

$$\frac{1}{2} kx^2$$

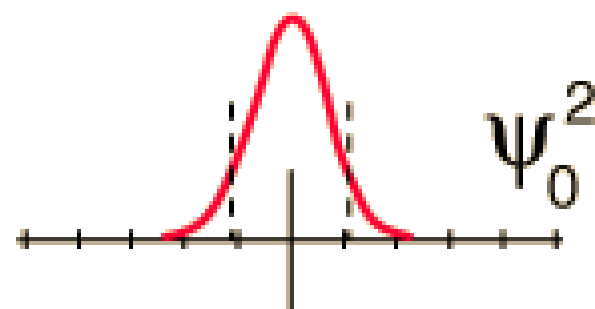
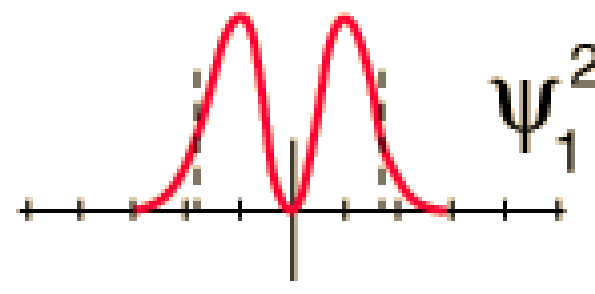
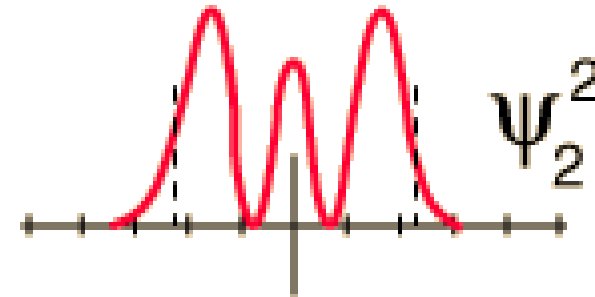
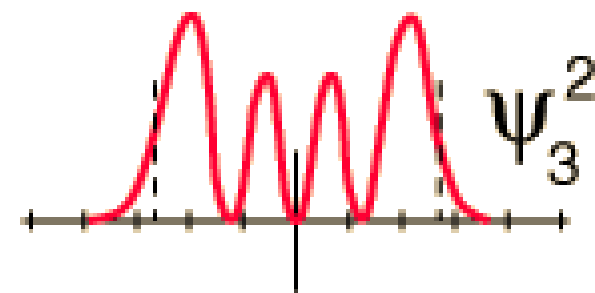


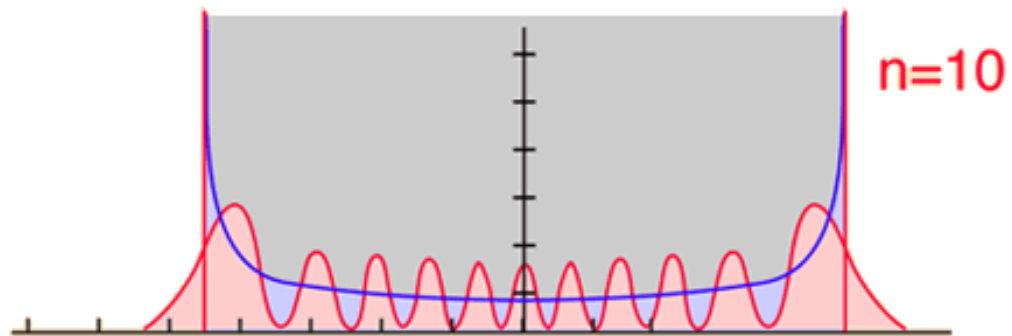
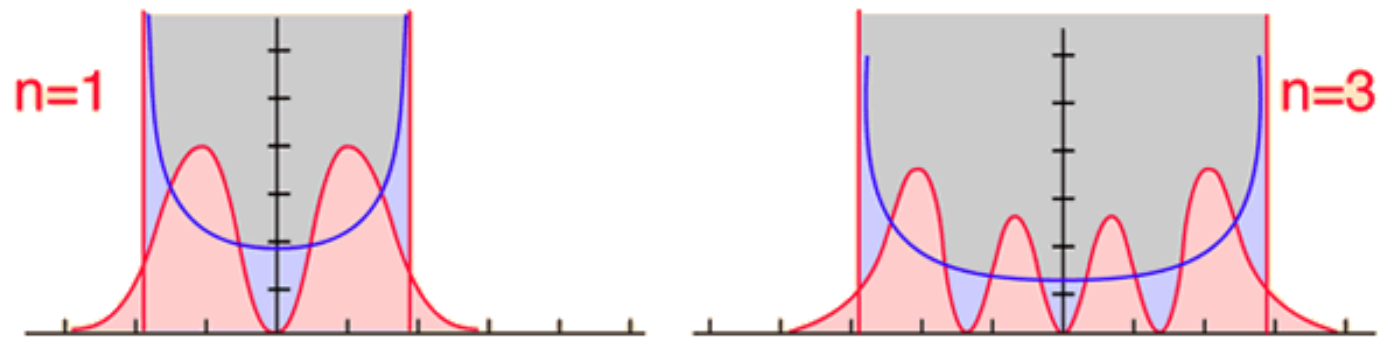
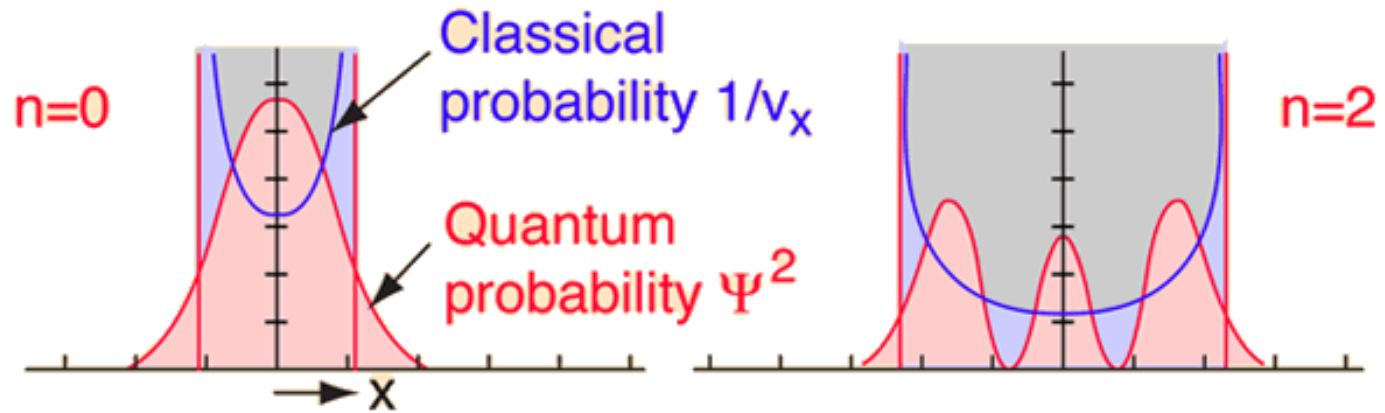
$x=0$  represents the equilibrium  
separation between the nuclei.



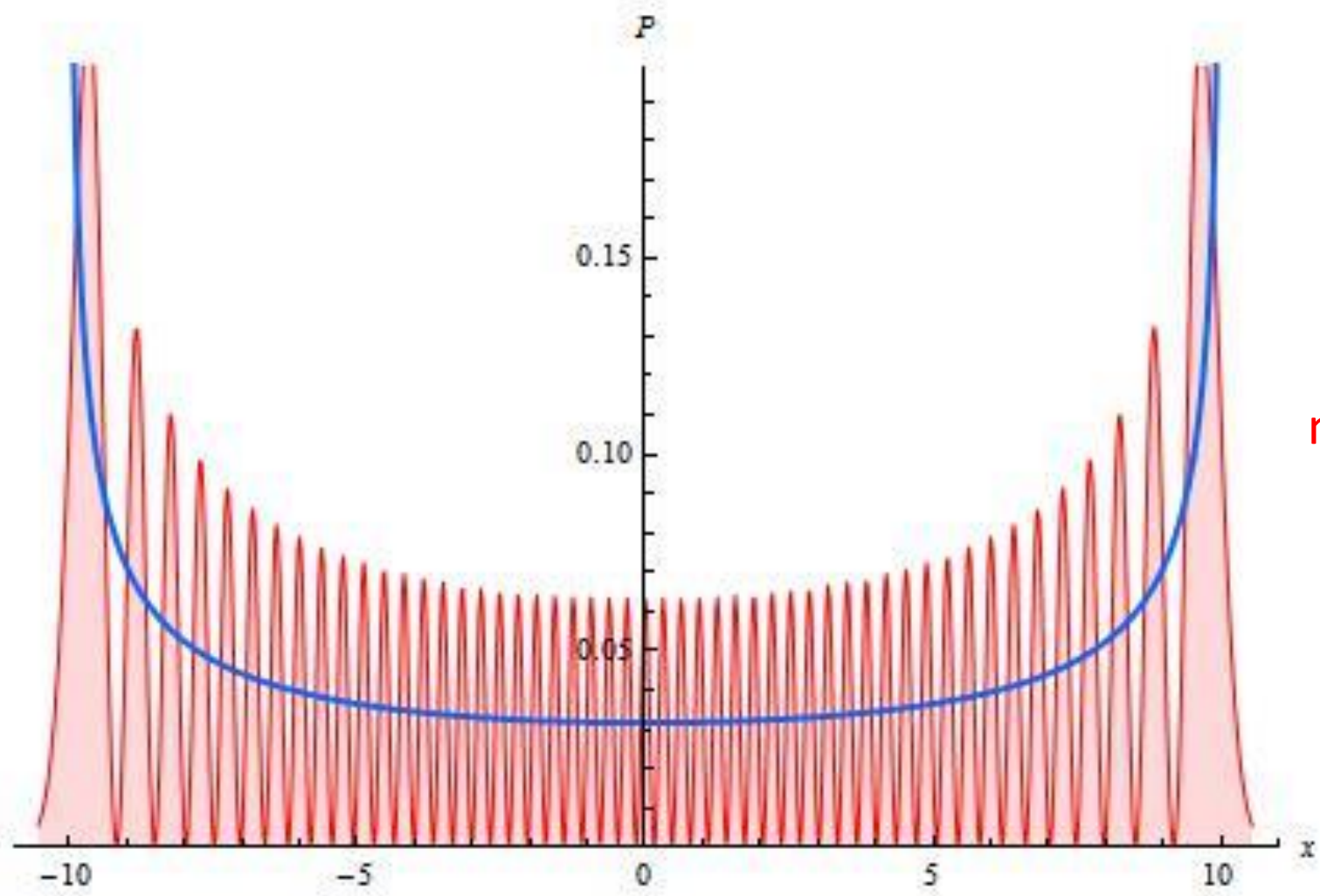


Harmonic oscillator potential and wavefunctions





The Correspondence Principle:  
As the quantum numbers become large, quantum results must reproduce classical predictions.



$n=50$