

Soluções da ESIT - Poço de Potencial Quadrado Finito

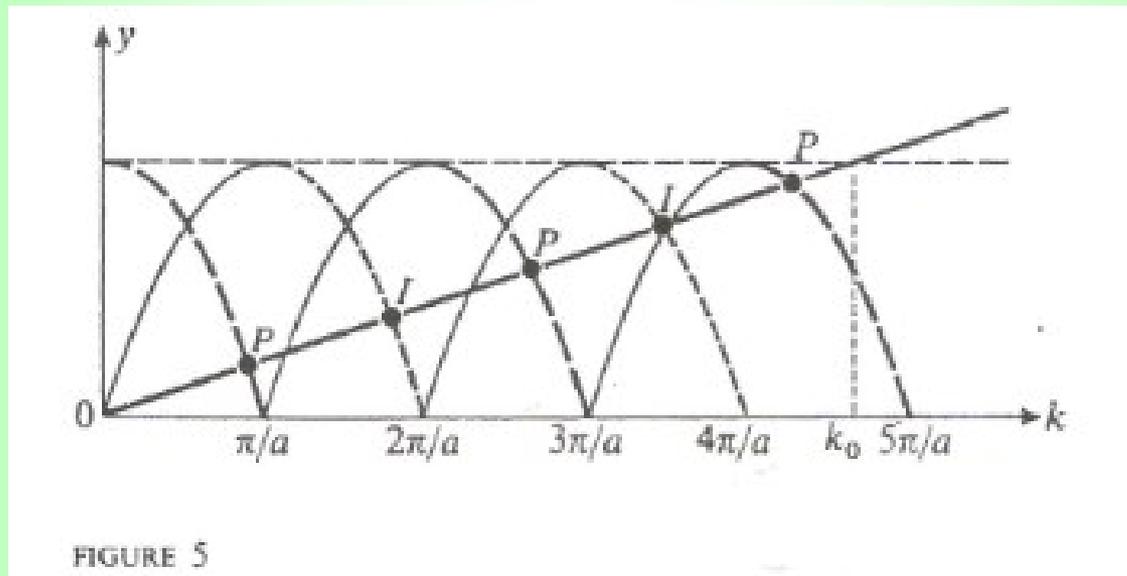


FIGURE 5

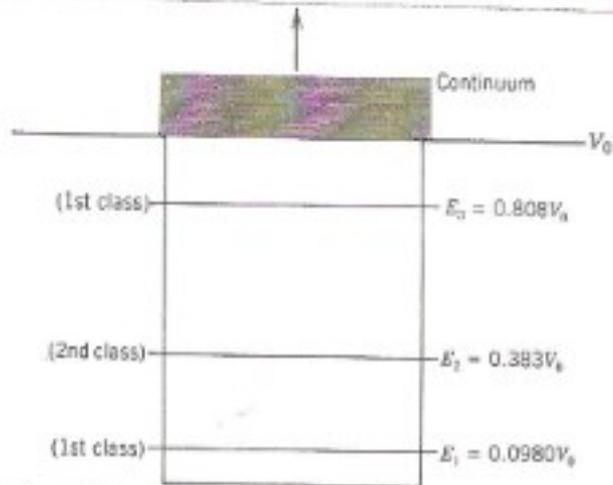
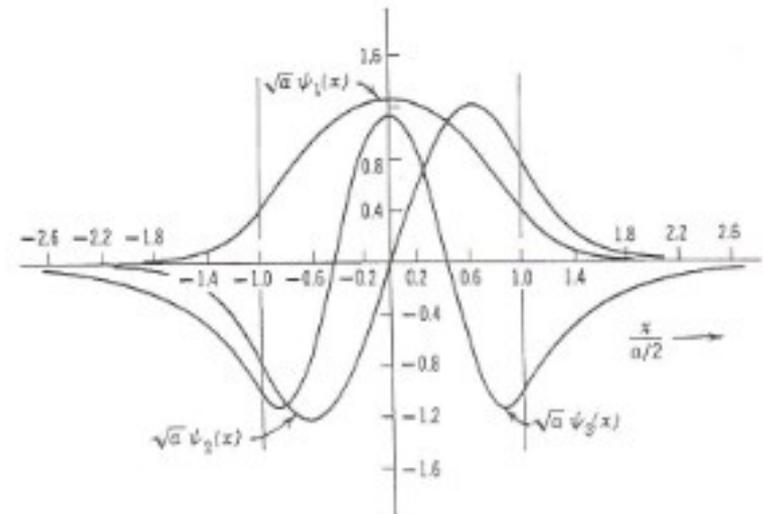


Figure H-3 The eigenvalues of a particular square well potential.



Soluções da ESIT – Oscilador Harmônico

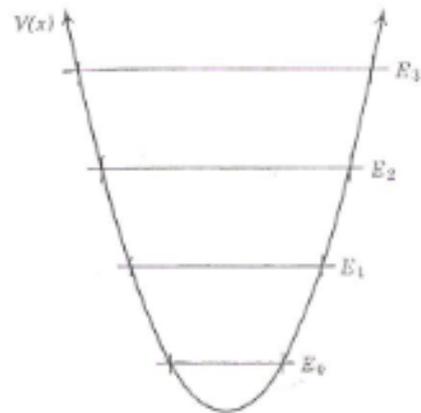


Figure 6-35 The first few eigenvalues of the simple harmonic oscillator potential. Note that the classically allowed regions (between the intersections of $V(x)$ and E_n) expand with increasing values of E_n .

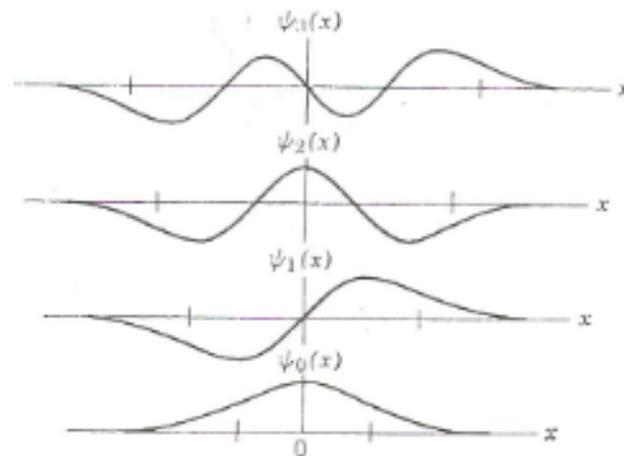


Figure 6-36 The first few eigenfunctions of the simple harmonic oscillator potential. The vertical ticks on the x axes indicate the limits of classical motion shown in Figure 6-35.

Soluções da ESIT – Oscilador Harmônico

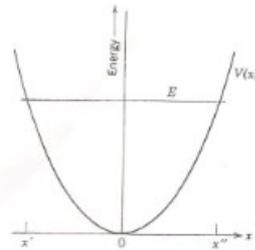


Figure 5-17 The potential energy $V(x)$ and one of the higher allowed values of the total energy E for a simple harmonic oscillator.

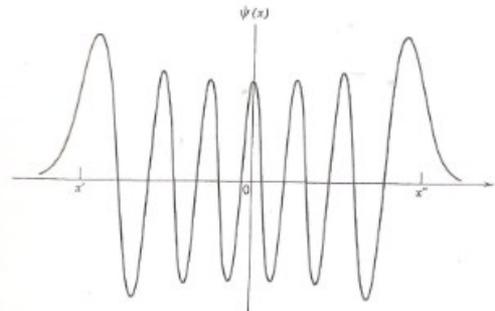


Figure 5-18 The eigenfunction for the thirteenth allowed energy of the simple harmonic oscillator. The classical limits of motion are indicated by x' and x'' .

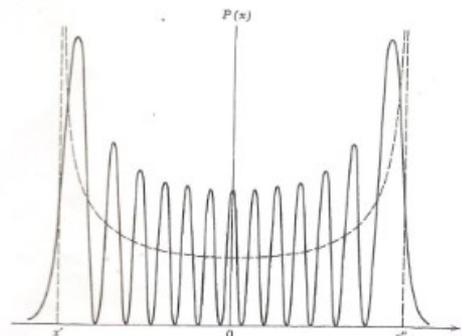
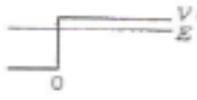
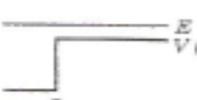
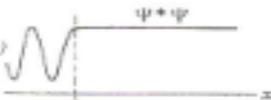
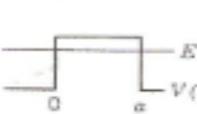
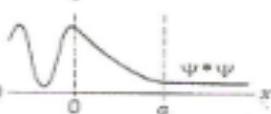
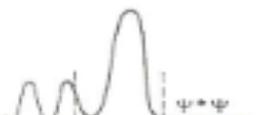
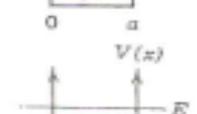
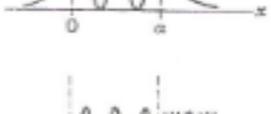
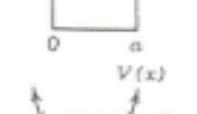


Figure 5-19 The solid curve is the probability density function for the thirteenth allowed energy of the simple harmonic oscillator. The dashed curve is the classical probability density function for simple harmonic motion with the same energy, and it follows closely the average value of the fluctuating quantum mechanical function. Compare with these functions for the first allowed energy shown in Figure 5-3.

Soluções da ESIT

Table 6-2. A Summary of the Systems Studied in Chapter 6

Name of System	Physical Example	Potential and Total Energies	Probability Density	Significant Feature
Zero potential	Proton in beam from cyclotron			Results used for other systems
Step potential (energy below top)	Conduction electron near surface of metal			Penetration of excluded region
Step potential (energy above top)	Neutron trying to escape nucleus			Partial reflection at potential discontinuity
Barrier potential (energy below top)	α particle trying to escape Coloumb barrier			Tunneling
Barrier potential (energy above top)	Electron scattering from negatively ionized atom			No reflection at certain energies
Finite square well potential	Neutron bound in nucleus			Energy quantization
Infinite square well potential	Molecule strictly confined to box			Approximation to finite square well
Simple harmonic oscillator potential	Atom of vibrating diatomic molecule			Zero-point energy