Quantum Mechanics:
WKB Approximation

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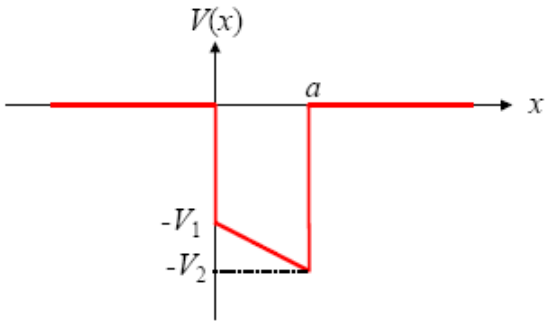
1. Consider a trapezoidal potential well shown in the figure below. Using the WKB method, find the bound states within the well. If V_1=0.3 eV, V_2=0.4 eV and a=5 nm, what are the bound state energies? Use $m^*=6\times10^{-32}$ kg for the effective electron mass in your calculations. (Notes for the WKB approximation are posted on the Web site)



2. Consider a triangular potential barrier as occurs in MOSFETs. The height of the barrier is 3 eV and its width is a. What are the maximum width of the barrier so that T=0.1 and T=0.001? For the effective electron mass use $m^*=0.91m_0$.