PHYS2210Spring2024_ Problems21to25

21) Complete the Jupyter Notebook for Problem 21 given in the Homework folder in LMS. Note that this problem is given separately from 22-25 in Gradescope and that only the print PDF of the problem is given there. You may complete this problem on another platform, but I can help you best if you use Jupyter Notebook.

22) Townsend Problem 3.5 – Probability of observation of energy eigenvalue and energy expectation values for a sum of eigenfunctions.

23) Townsend Problem 3.8 – A more math-y version (different wavefunction) of Problem 3.5.

24) Townsend Problem 3.12 – Sudden expansion of a well to twice its width and consequent probability of an observation of the new ground state.

25) Townsend 4.04

4.4. The curve in Fig. 4.32 is alleged to be the wave function for the fifth energy level for a particle confined in the one-dimensional potential energy well shown. Explain which aspects of the wave function are qualitatively correct. Indicate the ways in which the wave function is not qualitatively correct. Explain your reasoning fully for each error that you find.

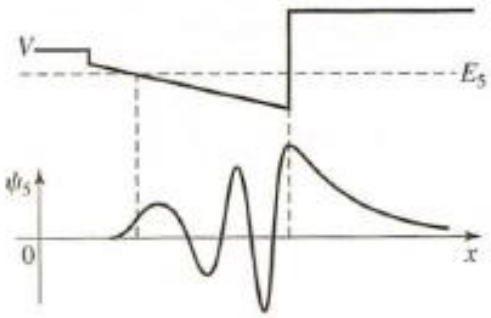

Figure 4.32 A sloped potential energy well and an alleged energy eigenfunction.