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Scattering Pretest

University of Colorado

Page 1 of 1

Please type your name in the form: Last, First:

Required.

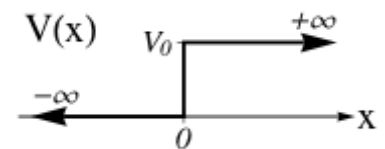
NOTE!! Please type in your CU userid (that's the username you use to log in to CULearn. We do NOT want your password. It probably looks like your last name, perhaps with a few extra characters. Note that it is definitely NOT your numerical (9 digit) student ID!!

This script cannot "error check", you have to be sure you type it in correctly! Thanks

Please type your CU userid:

Required.

Consider the graph of the potential energy for a one-dimensional system as shown at the right. $V(x) = 0$ for $x < 0$ and $V(x) = V_0$ for $x > 0$.



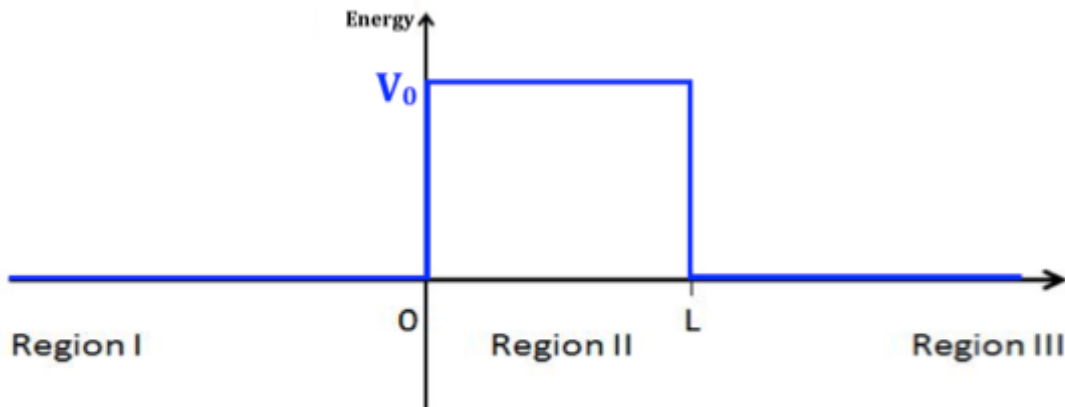
Q1: How many boundary conditions are there for this system for a situation which describes particles which approach from the right?

Required.

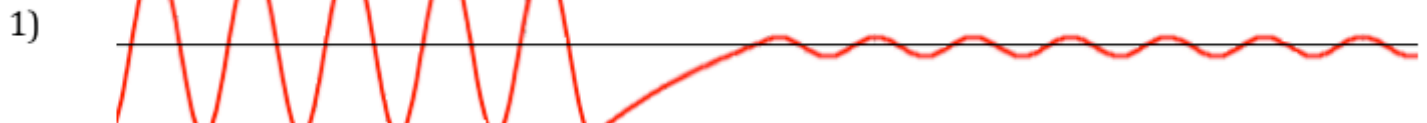
Q2: Describe in words the boundary conditions for this system for a situation which describes particles which approach from the right. If there are no boundary conditions (answer of zero in part a), explain why.

Required.

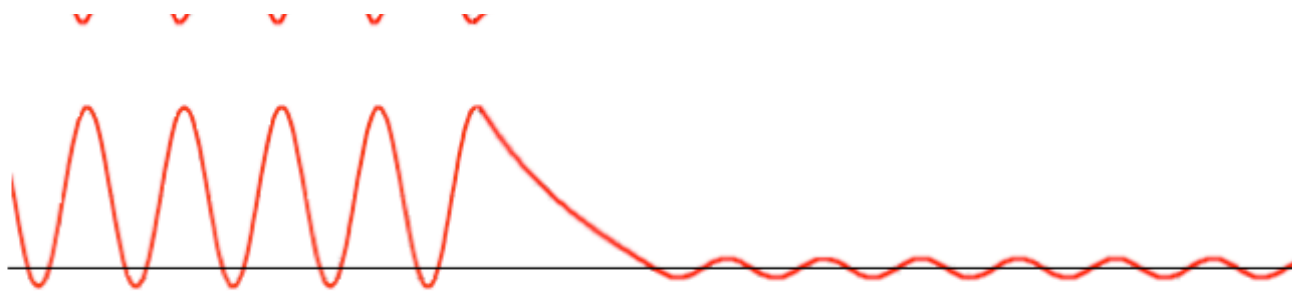
Now consider the potential barrier shown in the figure below. For the following questions, consider a right-going plane wave originating from $x \rightarrow -\infty$ incident upon the barrier with **total energy $E < V_0$** .



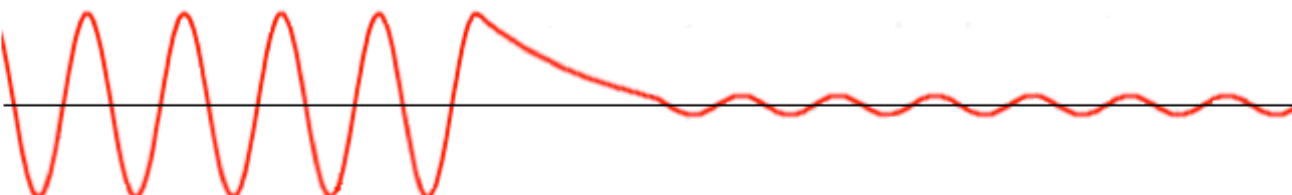
Q3: Which of the following plots of the *real part* of the wave function, $\psi(x)$, are possible for the potential region shown above and $E < V_0$?



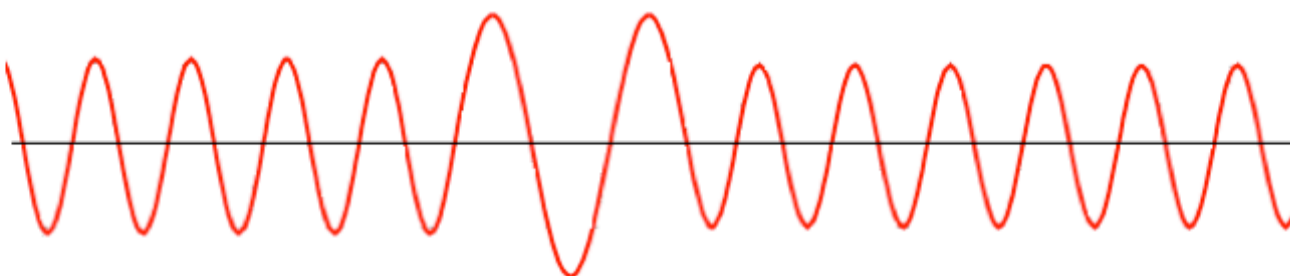
2)



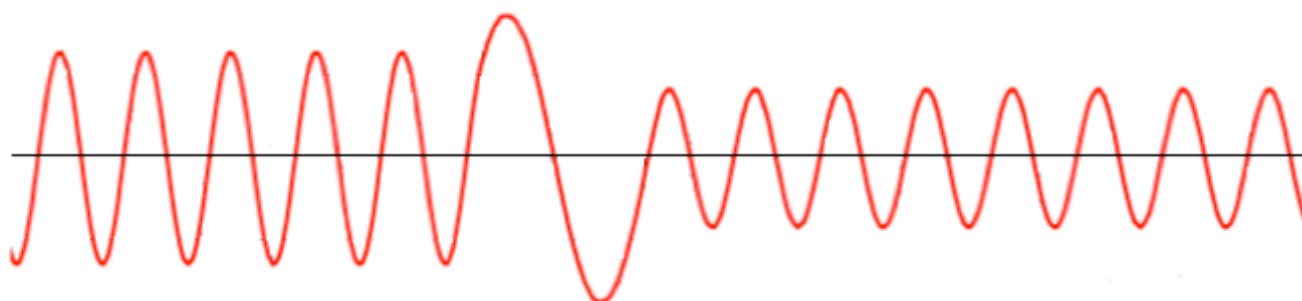
3)



4)



5)



Select one or more answers.

☐ 1☐ 2☐ 3☐ 4☐ 5

Q4: If you picked more than one graph above, explain why you picked multiple graphs. If you only picked one graph, explain why you only picked one.

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Submit responses

Questions or Comments?

Contact the 123 tutorial pretest coordinator at uwttl123@u.washington.edu

